

**Vol. II**  
**TRANSCRIPT OF RECORD.**

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**SUPREME COURT OF THE UNITED STATES**

**OCTOBER TERM, 1932.**

**No. 278.**

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**LAYNE & BOWLER CORPORATION, PETITIONER,**

**vs.**

**WESTERN WELL WORKS, INC.; ROTARY DRILLING AND  
DEVELOPMENT COMPANY, STANLEY M. HALSTEAD,  
ET AL.**

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**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT  
OF APPEALS FOR THE NINTH CIRCUIT.**

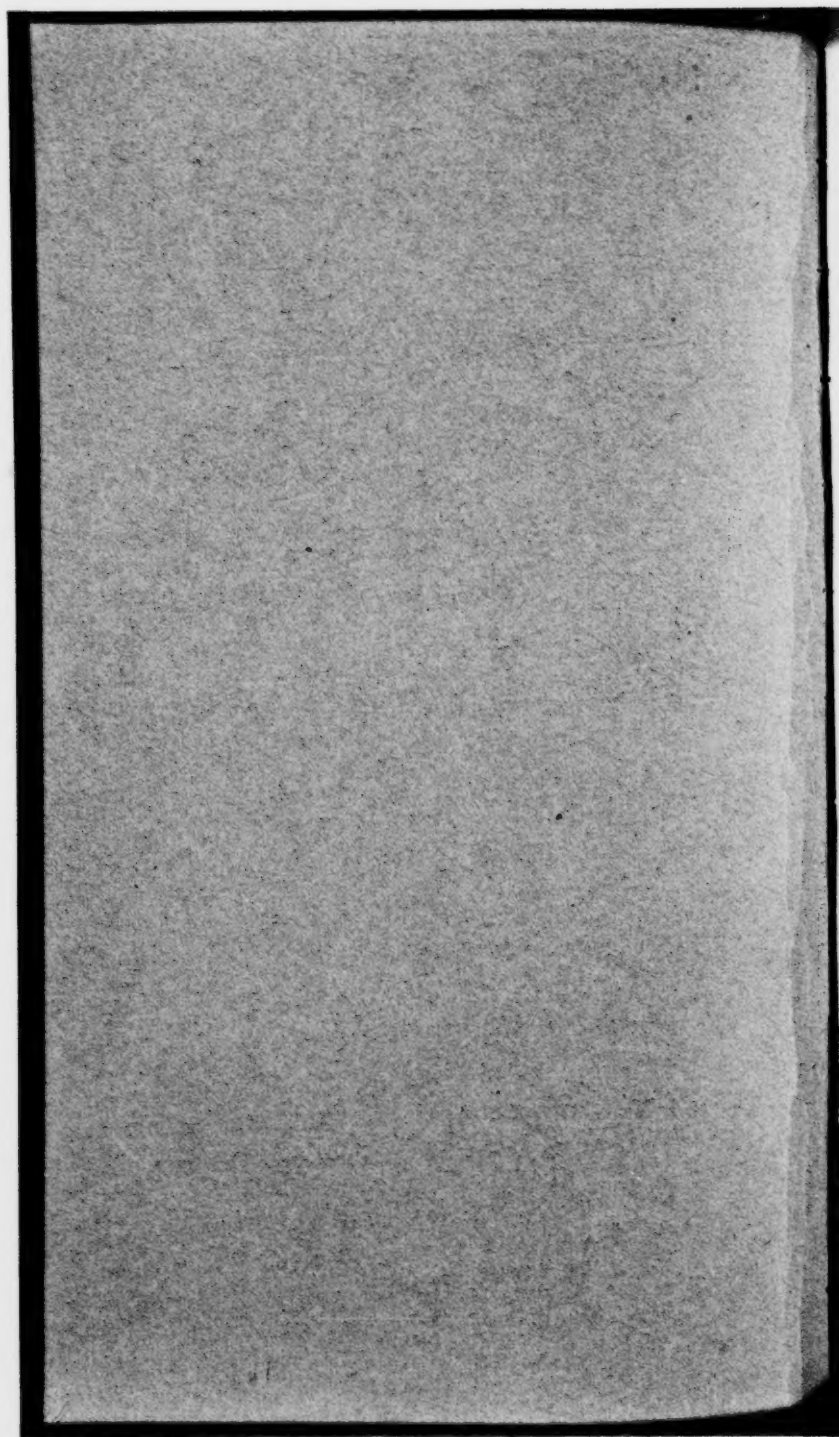
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**PETITION FOR CERTIORARI FILED FEBRUARY 24, 1933.**

**CERTIORARI AND RETURN APRIL 24, 1933.**

**(28,722)**





(Deposition of H. C. Robb.)

Q. (By Mr. BLAKESLEE.) Have you copies of those letters or telegrams? A. No, sir.

Q. Did you make copies at the time? A. No.

Q. Can you now state what was contained in the letters or telegrams?

A. I can in substance but not in detail. It pertained to the operation of the pump, and that the pump had been accepted, and that I was on my way home bringing an order for more pumps. [471]

Mr. LYON.—We object to the statement as not responsive and upon each of the grounds stated; that it is incompetent, not the best evidence, and no foundation laid for the introduction of secondary evidence.

Q. (By Mr. BLAKESLEE.) You say you recollect the substance of that letter and telegram. Will you state what such substance was?

Mr. LYON.—We repeat the objection.

The MASTER.—Now, Mr. Lyon, what better can you suggest?

Mr. LYON.—They have not made any showing that the letters this man refers to or the telegram, does not exist among those files. The main thing that would be valuable at all, is dates. So, what is the materiality of the letter otherwise? We object to it on the ground that it is immaterial.

Mr. BLAKESLEE.—It was early in 1904 and shows what he did then about this test.

The MASTER.—Did you give those letters or telegrams to the Pabst Brewing Company to send Byron Jackson, or did you send them yourself?

A. I sent them personally.

(Deposition of H. C. Robb.)

Q. (By Mr. BLAKESLEE.) You don't know that they had any copies of them at all?

A. No; they would not have any, excepting the last communication that I took for the contract for more pumps. The Pabst Brewing Company would have a record of that.

Q. (By the MASTER.) Anything that you sent to the Byron Jackson Company, you know of no copies of them?

A. The only place that I would know where to look, is with the Telegraph Company copies on file of messages sent.

Q. (By Mr. LYON.) Have you made any search for any copies whatever of that telegram or letter?  
[472] A. No.

Q. Have you made any effort at all to find them?

A. I didn't know that the question would be raised and had no occasion to look for them.

Mr. BLAKESLEE.—We have proven that the shop records, except the tracings were destroyed.

The MASTER.—The testimony is that there was a fire in San Francisco and that all the records of the Byron Jackson Machine Works except tracings and one or two other items were destroyed.

Mr. LYON.—Mr. Keating's testimony does not so show. It shows that they have a large number of records and it is not shown what those records are. I agree with you that Mr. Jackson said there was nothing but tracings. Mr. Keating's testimony was that they have other records besides that.

Mr. BLAKESLEE.—He was not there then and does not know.

(Deposition of H. C. Robb.)

Mr. LYON.—We stand on the objection. The only material part of this thing, if it is material for any purpose, is to prove a date, and even that is hazy. The witness does not pretend to be able to give the date of it. And it can be fixed doubtless, by the subsequent contract.

The MASTER.—That can be shown at the Pabst Brewing Company. But the mechanics who were sent to install the machinery, whose report—

Mr. BLAKESLEE.—The report was a part of the performance of his duty and we want to know the nature of his report.

The MASTER.—The objection is overruled.

Mr. LYON.—Exception.

(Question is read.)

A. The telegram was to the effect that the pump had been accepted and an order given for more pumps and the payment for [473] the pumps I was bringing home.

Q. (By Mr. BLAKESLEE.) Where did you get that payment?

A. At the Pabst Brewing Company plant.

Q. What was the nature of the payment? In what form? A. A check.

Q. By whom was it drawn?

A. By the President of the Pabst Brewing Company.

Q. In favor of whom?

A. Byron Jackson Iron Works—Byron Jackson Machine Works.

Q. (Mr. BLAKESLEE.) Was it "Iron Works" or "Machine Works"?

(Deposition of H. C. Robb.)

Mr. LYON.—Objected to as leading.

Mr. BLAKESLEE.—He has already corrected himself. What was the amount of money appearing on the face of that check?

A. I don't remember now. It was over \$500.00, but just how much I don't recollect.

Q. Now, you have mentioned certain orders given you at the same time, namely, upon the acceptance of this Pabst pump, and at the time of the payment for the same. At the time you received this check, what were the orders you received?

A. An order for three more pumps.

Q. (By Mr. LYON.) Was that in writing?

A. (By Mr. BLAKESLEE.) In what form did you receive those orders? A. A written order.

Q. Who delivered it to you?

A. The president of the company.

Q. At the office of what?

A. The office of the Pabst Brewing Company.

Mr. LYON.—We object to so much of the witness' statement as contains the statement of what the orders contained or what it was for, as incompetent, and not the best evidence and no [474] foundation laid for the introduction of secondary evidence. I move to strike that portion from the record.

The MASTER.—The objection is sustained and the motion granted.

Q. (By Mr. BLAKESLEE.) Did you have any discussion with the Pabst people about these further orders that you mentioned? Did you take part in any talk concerning it? A. Yes, sir.

Q. What took place.

(Deposition of H. C. Robb.)

Mr. LYON.—Objected to as incompetent, it not being shown that the party plaintiff or anybody representing him was present, and it cannot be binding in any manner upon the plaintiff inasmuch as all of this took place, according to the testimony of the witness, approximately a year after the date upon which the application for the patent in suit was filed, and it cannot be any part of the defense of prior invention, or competent to prove prior invention.

Mr. BLAKESLEE.—It is part of our defense of prior invention, in that it shows the carrying on of this invention and the commercial and continued commercial use. And part of our further defense that both the plaintiffs and defendants in this case have used substantially the construction so installed at Milwaukee, and not the construction of the Layne patent in suit.

The MASTER.—The principal objection to the testimony is that the plaintiffs were not there at all, and, furthermore, there is evidently a writing of it in somebody's possession.

Mr. BLAKESLEE.—I didn't wish to lead the witness, but if the order was given to him other than by this writing, or in addition to the writing, he can testify as to that.

Q. What took place when you received these orders?

Mr. LYON.—The same objection in regard to that.  
[475]

The MASTER.—With reference to the conversation, the objection is sustained.

Q. (By Mr. BLAKESLEE.) Omit any con-

(Deposition of H. C. Robb.)

versation. What took place when you received the order for the three further pumps? Where did you receive them and what took place?

A. It took place in the president's private office; some specifications were a little different from the contract that had been made before.

Mr. LYON.—The last statement in regard to any specifications, we move to be stricken from the record and excluded from consideration on the ground stated in the objection to the question.

Q. (By Mr. BLAKESLEE.) What were the specifications you refer to?

A. Regarding the balancing.

The MASTER.—If they were specifications in writing, there must be some writing about it and that is the best evidence.

Q. (By Mr. BLAKESLEE.) What did you do with these orders which you received from the vice-president's office?

A. I carried them in my pocket to the Byron Jackson Iron Work's Office.

Q. What was the nature of those orders? What were they? Papers, drawings or what?

The MASTER.—You need not give the contents of the orders, but were they orders, or drawings or specifications?

A. In contract form, an order for three pumps.

The MASTER.—The order for three pumps will be stricken out.

Q. (By Mr. BLAKESLEE.) What did you do with this matter that you received any contract for?



(Deposition of H. C. Robb.)

A. Delivered it to the Byron Jackson Machine Works.

Q. When you delivered it or after you delivered it, do you remember anything further that occurred in the Byron Jackson [476] Machine Works in connection with enclosed shaft pumps?

Mr. LYON.—Objected to as leading and suggestive.

The MASTER.—What did the Byron Jackson Machine Works ever do? Did they abandon the pump or go on with it?

Mr. LYON.—I don't know. That is what we want to know.

The MASTER.—I can't answer it and you can't answer it, but what did the Byron Jackson Machine Works do with reference to that kind *or* pumps?

Mr. LYON.—With reference to this order?

Mr. BLAKESLEE.—I am not talking about the order, because that is one part we have not been permitted to inquire.

The MASTER.—What did they do with reference to that kind of shaft pump?

Q. (By Mr. BLAKESLEE.) What was done at the Byron Jackson Machine Works with reference to that kind of enclosed shaft pumps?

A. They were manufactured continuously.

Q. How soon after you came back was there anything of that sort done?

A. They were manufactured all the time.

Q. For how long a period?

A. As long as I was there.

Q. Do you remember any concern for whom such

(Deposition of H. C. Robb.)

enclosed shaft pumps were built after you returned from Milwaukee?

Mr. LYON.—We object to that as leading and suggestive, and if the term “such enclosed line-shaft pumps, means anything in this connection,” it is putting it absolutely in the mouth of the witness—the entire construction which is in issue, and if it don’t, it is immaterial.

Mr. BLAKESLEE.—Leave out the word “such” and make it “enclosed line-shaft pump.”

The MASTER.—What was done after you came back from [477] Milwaukee with reference to the manufacture of enclosed line shaft pumps?

A. They were manufactured whenever they could get an order, and they were manufactured up to the time that I left eight years ago.

Q. How did they compare with this pump you put in for the Pabst people at Milwaukee?

A. There were very little changes made; no change in the tubing or shafting construction.

Q. Do you remember the names of any persons or parties for whom the enclosed shaft pumps were built for the Byron Jackson Iron Works after you returned from Milwaukee?

A. I can state those that I installed pumps for.

The MASTER.—State it.

A. The Lagrange Service Company, the Schlitz Brewing Company of Milwaukee. The Southern Pacific Railway Company in Santa Clara County, California, the Santa Fe Railroad at Richmond.

Q. (By Mr. MONTGOMERY.) What period have you covered in this question?

(Deposition of H. C. Robb.)

Mr. LYON.—After he left Milwaukee, till he left there in 1909.

A. That is all I can recall, for the time being.

Q. (By Mr. BLAKESLEE.) Please state the number of steps or stages in the pump you installed for the Pabst people. A. Four stages.

Q. Do you remember the diameter of the bowls?

A. Fourteen inch, I think, in a fifteen-inch well.

Q. Do you remember when this Lagrange pump was built?

A. In 1905, one of them. In 1906, I think was another.

Q. Do you remember anything in detail as to those pumps, that is, as to sizes and the number of stages? [478]

A. At Lagrange the well was down a hundred feet. I had a twenty-five (25 H. P.) horse-power motor on it connected directly.

Q. How many stages? A. Three.

Q. Do you know who installed that pump?

A. I did.

Q. For whom?

A. The Lagrange Service Company.

Q. Under whose instructions did you go to install it? A. The Byron Jackson Machine Works.

Q. Do you remember the revolutions per minute of the shaft of the Lagrange pump?

A. 1150, I believe.

Q. How about the number of gallons per minute delivered? A. I don't remember the number.

Q. Do you remember the head?

A. A hundred feet?

(Deposition of H. C. Robb.)

Q. Prior to your trip to Milwaukee in 1903, do you remember any other pump at the Byron Jackson Machine Works with an enclosed shaft?

Mr. LYON.—We object to that as exceedingly leading and suggestive and particularly vicious, and I protest against the conduct of the examination in the manner to suggest to the witness everything it is that he wants him to testify to.

The MASTER.—Let him describe the pump.

Mr. BLAKESLEE.—We insist that this examination has been most open. I am simply trying to save time.

The MASTER.—The objection is sustained.

Q. (By Mr. BLAKESLEE.) Please tell us about any other bored-well pump that you remember at the shop of the Byron Jackson [479] Machine Works prior to your trip to Milwaukee in 1902.

A. I can't recall any other pumps that were made or shipped before that time, except the pump that was on the floor while I was away and, when I returned I was given the upper part of the frame to make other tests with, but not with the pump itself.

Mr. LYON.—Unless it is stipulated that the last answer of the witness simply means that he found some pump there on his return, we move to strike the answer from the record and exclude it from consideration as incompetent, as the witness clearly cannot know anything about what was on the floor of that shop while he was away.

The MASTER.—He can tell what he found there.

Mr. LYON.—That is all the testimony can stand for.

(Deposition of H. C. Robb.)

Mr. BLAKESLEE.—What was the nature of the pump you found on the floor? Briefly describe it.

A. It was a pump with an enclosed shaft.

Q. When was the first time you saw that pump?

A. In 1902.

Q. That is before you went to Milwaukee?

A. Yes, sir.

Q. (By Mr. BLAKESLEE.) Now, what was its condition when you first saw it, and where was it?

A. It was in the tank of a pulley frame on the floor above.

The MASTER.—At the Byron Jackson Works, do you mean? A. Yes, sir.

Q. (By Mr. BLAKESLEE.) What was its position with respect to being horizontal or vertical?

A. It was sitting vertically over the tank, discharging through piping with a valve on it and then back to the tank.

Q. Can you name or fix the time in 1902? [480]

A. Not to be positive about it, no.

Q. And what to your recollection was the make-up or construction of that pump?

A. I didn't see the drawings and I cannot say how it was made.

Q. What did you see when you looked at it pumping water?

A. The shells and the discharge pipe on the shaft.

Q. What part of the shaft could you see?

A. That it was connected with the pulley frame.

Q. When you saw it lying on the floor, what did you observe?

A. I don't remember any of the details on it.

(Deposition of H. C. Robb.)

There was nothing to bring it forcibly to my mind at that time.

Q. When you found it there did you see it?

A. Yes, sir.

Q. And that is how you came to find it—by seeing it?

A. Yes, sir; and there was more or less discussion among the employees, what the result of the test was.

Q. Tell us what parts you saw?

A. It looked similar to the Pabst pump, and I had drawings of those.

Mr. LYON.—I move to strike the last answer from the record as a mere conclusion of the witness, incompetent and not proper evidence.

The MASTER.—You cannot compare it with some other pumps.

Mr. BLAKESLEE.—He can state that it was like some. That is the impression his mind got. Now, I will ask him to state in what respect was it similar or how was it constructed.

A. The bowls were similar to what was constructed for the Pabst pump, and the shafting and packing were similar to those used in the Pabst pump.

Q. Where was the packing box? [481]

Mr. LYON.—I make the same motion with regard to that answer.

The MASTER.—The motion is denied.

Mr. LYON.—Exception.

Q. (By Mr. BLAKESLEE.) Where was the packing box?

A. I don't believe I could recall. I did not go into it to the bottom.



(Deposition of H. C. Robb.)

Q. How was the shaft enclosed?

Mr. LYON.—Objected to as leading and suggestive.

Mr. BLAKESLEE.—He said it had an enclosed shaft.

A. I don't know what the details were. I was away a great deal at that time.

Q. Do you remember any other details of it?

A. Not of that pump?

Q. Did you see it at any time when it was taken apart? A. No, sir.

Q. How long a period of time did you observe it pumping water?

A. I did not see it pumping much water—not to exceed two hours.

Q. When did you arrive back at San Francisco with the check you have told us about and the further orders from the Pabst people?

A. In the early part of April, 1904.

Q. And whom did you see when you returned to the shop? To whom did you make your report at the Byron Jackson Machine Works?

A. Byron Jackson himself.

Q. To whom did you deliver the order from the Pabst people and the check?

A. Byron Jackson in person. [482]

Mr. LYON.—We will object to putting before the witness any drawings or tracings present here unless the foundation is first laid to show that the witness has any knowledge of the drawings etc., particularly with any of the old records.

Mr. BLAKESLEE.—Q. You have spoken about

(Deposition of H. C. Robb.)

certain tracings or drawings you took to Milwaukee with you in 1903. Do you know what became of them or where they are?

A. I returned them to the Byron Jackson Machine Works.

Q. Have you seen them since? A. Yes, sir.

Q. When?

A. At different times while I was in their employ.

Q. Since you left their employ have you seen them?

A. Yes.

Q. When? A. Recently.

Q. How often did you see them while you were with the Byron Jackson people?

A. Whenever I was detailed on that work.

Q. I show you a tracing which is in evidence as Defendant's Exhibit 4, covering up the dates and data at the corner, and ask you if you have ever seen this tracing before.

A. I have only seen the blue-print and not the tracing.

Q. When did you last see a blue-print of this?

A. I don't know. A long time ago.

Q. How long ago?

A. I couldn't say. Ten years, probably.

Q. When did you first see a blue-print of this tracing?

A. While the pump was being manufactured. That would be in 1902 or '03. I think it was 1903 when I first saw it.

Q. What pump do you refer to? [483]

A. For the Pabst plant.

Q. Where did you see it?

(Deposition of H. C. Robb.)

A. Both in the factory at San Francisco, and in Milwaukee in my daily work.

Q. What drawings or tracings did you use to put together and assemble the pump for the Pabst people when you went East?

A. The drawings supplied by the Byron Jackson Machine Works.

The MASTER.—And that was a blue-print?

A. Yes.

Q. And not that original tracing?

A. Not this tracing.

Q. (By Mr. BLAKESLEE.) Was there any comparison between that blue-print and this tracing?

A. Identical, so far as I can observe from a casual inspection.

Mr. LYON.—I would like to ask the witness this question: This is the only drawing that you had? A blue-print of this, that you had with you at that time?

Mr. BLAKESLEE.—We object to that at this time. He said he had drawings. We don't believe he should be cross-examined on a number of drawings until we get through.

Mr. LYON.—We don't think that the witness should have a number of drawings that he may never have seen before, so far as appears from the evidence. He had some blue-prints at different times—we don't think that the witness should have presented to him a number of drawings and then be simply asked to state whether or not he had ever seen a certain blue-print or drawing before. He

(Deposition of H. C. Robb.)

ought to lay some foundation, so that the Master may judge of what he does recollect.

Mr. MONTGOMERY.—It is his own question. I don't think [484] there should be any discussion. Mr. Lyon has asked a question. Let the witness answer.

Mr. BLAKESLEE.—He has specified that he returned those to the Byron Jackson Machine Works.

The MASTER.—The objection was as to the foundation, and you disagree among yourselves, on that proposition.

Mr. MONTGOMERY.—Let him answer the question.

Mr. BLAKESLEE.—All right.

Q. (By Mr. LYON.) Now, when you were in Milwaukee assembling this pump for the Pabst Company, how many blue-prints did you have?

A. Three, I believe.

Q. And do you think that this one that you have identified here was one of them? A. Yes.

Q. Now, tell us what the others were, in a general way.

A. There were the top works and the other was the shaft and tubing.

Q. Were those on one sheet or two different sheets?

A. I think they were on two different sheets.

Q. Have you seen any of those at different times?

A. Yes, sir.

Q. Are you sure they were the same prints?

A. They were different sizes.

Q. (By Mr. BLAKESLEE.) Did you use them

(Deposition of H. C. Robb.)

on the Schlitz Brewing Company job?

A. I was not there in installing.

Q. You did not have anything to do with that.

A. No, sir; only getting the order.

Mr. LYON.—I suggest that you ask the witness to pick them out here if he can identify them.  
[485]

Mr. BLAKESLEE.—There are about thirty prints, and I am asking him to identify the drawings. I show you a tracing, Defendant's Exhibit 5, and ask you if you ever saw the same before.

A. Yes, sir; that is for the Pabst Brewing Company plant.

Mr. BLAKESLEE.—Let the record show that the date and data on the corner of the sheet were likewise covered up.

Q. When did you first see this tracing, exhibit 5?

A. This is the first time I have seen the tracing. I worked by the blue-print.

Q. How did the blue-print compare with this tracing?

A. The same so far as I can observe without taking lots of time to detect any difference.

Q. Similarly I show you a tracing, being part of Defendant's Exhibit 6, and identified as 3-E-22, covering up the dates and data in the corner thereof, and ask you if you have ever seen that before.

A. This is the top works of the Pabst plant.

Q. Did you ever see this tracing before?

A. Not the tracing; the blue-print.

(Deposition of H. C. Robb.)

Q. How did the blue-print compare with the tracing? A. The same.

Q. When did you first see such blue-print?

A. When they were submitted as working drawings in 1902 or '03.

Q. For what purpose? A. Manufacturing.

Q. At the shop of the Byron Jackson Machine Works? I would like to state, before producing any further tracings, that we do so only after having a description verbally made in full by this witness of what he installed. And I didn't lay them before him until he had. He says he only had three blue-prints, [486] in the installation that he made. So it would not in any sense educate him in that construction.

The MASTER.—If he wants to identify any more, show him it.

Mr. MONTGOMERY.—If he looks at those tracings they show on their face, and he can easily identify them, and he has testified to another pump.

The MASTER.—Except the one that was on the floor, he has not identified any other pump.

Mr. MONTGOMERY.—He testified that he installed one at Lagrange, Illinois.

The MASTER.—Is the drawing for that pump here?

Mr. MONTGOMERY.—Yes, sir.

Mr. LYON.—He has not described that one.

Q. (By Mr. BLAKESLEE.) With respect to the Legrange installation in 1905, what did you work from in installing it?

A. That was all manufactured in San Francisco,



(Deposition of H. C. Robb.)

so I did not have any drawings to install it.

Q. You did not use any drawings in connection with it at all? A. No, sir.

Q. Did you see any drawings used in connection with its manufacture before you installed it?

A. No; only in the shop—the shop drawings.

Q. Have you ever seen those drawings since?

A. Only in the shop.

Q. Never have seen them since you left the shop?

A. No, sir.

Q. I show you Defendant's Exhibit 6, or part of same, numbered 1-E-137, covering up the data and dates in the corner, and ask you if you have ever seen the same before? Have you ever seen this tracing before? [487]

Mr. LYON.—He said it was the Lagrange pump.

The MASTER.—He says he never saw it before.

Mr. LYON.—We move to strike out on the ground that it is not responsive.

The MASTER.—Stricken out.

Q. (By Mr. BLAKESLEE.) Have you ever seen this tracing before?

A. Not the tracing itself, but the blue-prints from it.

Q. How did the blue-prints compare with it?

A. The same.

Q. When did you see them?

A. The year the pump was manufactured, in 1905.

Q. And you saw the blue-print where?

A. In the factory at San Francisco.

Q. Do you know what this tracing shows?

(Deposition of H. C. Robb.)

The MASTER.—He said they made the pumps from it.

Mr. BLAKESLEE.—That ought to be enough. Counsel may inquire. [488]

H. C. ROBB, recalled.

Direct Examination (Resumed).

Q. (By Mr. BLAKESLEE.) I show you three photographs and ask you if you know what they are.

A. These are photographs that I took of the Pabst plant at the time of installation.

Q. You took them personally? A. Yes, sir.

Q. You mean the Pabst plant you have told us about—the pump you installed? A. Yes, sir.

Q. When did you take them?

A. January, 1904.

Q. I notice on the reverse side of one of them, a date "January, 1903." What does that signify?

Mr. LYON.—We object to that as incompetent, no foundation laid and done simply to coach and educate the witness, so far as the testimony of the witness so far shows.

The MASTER.—The objection is sustained. There is no foundation laid.

Q. Do you know who put the writings on the reverse side of this photograph? A. I did.

Q. (By Mr. BLAKESLEE.) What does this writing signify?

Mr. LYON.—I object to that on the same ground.

The MASTER.—When did he put it on?

Q. (By Mr. BLAKESLEE.) When did you put these writings on?

(Deposition of H. C. Robb.)

A. Several months after I took them, when I first commenced to accumulate I saw the necessity of putting it on the [489] back.

Q. Where did you put these writings on?

A. In San Francisco.

Q. Now, I refer to this photograph which has on its reverse side some matters in bluish writing. What does the date "Jan., 1903" signify?

Mr. LYON.—Objected to as incompetent and no foundation laid.

The MASTER.—Is that a foundation, simply to ask a witness to look at a thing and state what it signifies? He said he put it on several months afterwards. And it don't say whether it was correct or incorrect?

Mr. BLAKESLEE.—I suppose that will follow. I am willing for it to go as it is, only it is an obvious error and I wish to correct it.

The MASTER.—Ask him if he put it on and whether it is correct or not.

Mr. BLAKESLEE.—Unless we know what it signifies, how can we know anything about its correctness? What does that signify, and state, please, in that connection, what you had in mind in making that writing on there.

Mr. LYON.—The same objection.

The MASTER.—The objection is sustained.

Q. (By Mr. BLAKESLEE.) Is that date on there correct or incorrect? A. It is not correct.

Q. What should the date be?

A. January, 1904.

(Deposition of H. C. Robb.)

Q. And so corrected, what does that signify—by “January, 1904”?

Mr. LYON.—The same objection.

The MASTER.—Overruled. [490]

Mr. LYON.—Exception.

The MASTER.—I don't think it is proper to show it to witness and ask what it signifies.

Q. (By Mr. BLAKESLEE.) What date did you intend to have there?

Mr. LYON.—The same objection.

The MASTER.—Sustained.

A. The date the pump was installed.

Q. (By Mr. BLAKESLEE.) What date was this pump installed? A. January, 1904.

Mr. BLAKESLEE.—We offer these photographs in evidence and ask that they be marked Defendant's Exhibits 7, 8, 9, respectively, marking the one having the blue pencil markings on the reverse side as exhibit 7.

Mr. LYON.—Objected to as incompetent and no foundation laid and irrelevant and immaterial.

Mr. BLAKESLEE.—The witness has not the pump here.

The MASTER.—He didn't say anything about what installation, where he took it and when he took it and whether it was at the time of installation or months after.

Mr. BLAKESLEE.—He said he took it of the installation which he personally completed in that month.

Mr. LYON.—I did not so understand his testimony.

(Deposition of H. C. Robb.)

The MASTER.—He don't state whether it is correct likeness, of anything, or where it was taken.

Q. (By Mr. BLAKESLEE.) Where did you take these photographs?

A. Milwaukee, at the Pabst Brewing plant.

Q. And you say you took them personally?

A. Yes, sir.

Q. And what sort of a camera did you use?  
[491]

A. There were two different cameras; one was a 3-A, I believe they call it.

Q. Do you remember the plates you used, as to their receptiveness to actinic action?

A. It was a roll film.

Q. Was the camera and all the apparatus at that time in working condition?

Mr. LYON.—Objected to as leading and suggestive.

The MASTER.—It is leading.

Q. (By Mr. BLAKESLEE.) What was the condition of the camera and the rest of the photographic apparatus with which you took these photographs at the time you took them?

A. In good order.

Q. To your knowledge do these photographic results represented in these prints accurately photographically represent the things that are shown therein?

Mr. LYON.—Objected to as leading and suggestive.

The MASTER.—The objection is overruled.

Mr. LYON.—Exception.

(Deposition of H. C. Robb.)

A. They do.

Q. (By Mr. BLAKESLEE.) Was anybody present when you took these photographs?

A. I don't remember.

Q. Do you remember the time of day you took them? A. No.

Q. What part of the twenty-four hours was it—the light hours or the dark hours?

A. The light hours.

Q. Then you took them by the actinic rays of the sun? A. Yes, sir.

Q. What did you do with the plates after you took the [492] photographs?

A. I had them developed.

Q. Where are the plates?

A. They are not taken on plates.

Q. Where are the films?

A. I don't know; in San Francisco, I guess.

Q. When did you last see them?

A. Years ago.

Q. Do you know who made the prints from the films? A. No.

Q. What did you do in that respect?

A. Had them printed in Milwaukee.

Q. Did you develop the plates? A. No.

Q. These have been in your possession ever since January, 1904? A. Yes, sir.

Q. Any alteration ever been made in them?

A. No.

Q. Were all these marks on the reverse side of these three prints put on the dates you have given?

(Deposition of H. C. Robb.)

Mr. LYON.—Objected to as leading and suggestive.

The MASTER.—The objection is sustained.

Q. (By Mr. BLAKESLEE.) When did you put these dates on these?

A. Several months after.

Q. How long would you say?

A. It might have been three months, four or five months.

Q. Were they all put on at the same time?

Mr. LYON.—Objected to as leading and suggestive.

Mr. BLAKESLEE.—I will mark the one with the pencil marks, A, B and C, and ask you when you put the marking on each one of these? [493]

A. All about the same time.

Q. How far apart?

A. I couldn't say. It is too far back to remember details.

Q. Can you state whether it was days apart or months apart?

Mr. LYON.—Objected to as leading.

The MASTER.—Sustained.

Q. (By Mr. BLAKESLEE.) Have you any recollection about it? A. No; I can't say.

Q. When, to your knowledge, did these leave Milwaukee—these photographs?

A. They have been in my possession.

Q. Where did you take them?

A. San Francisco.

Q. Did you show them to anyone there?

A. Yes, sir.

(Deposition of H. C. Robb.)

Q. To whom?

A. I can't remember. It was at the Byron Jackson Machine Works.

Q. Anyone in particular that you remember?

A. No.

Mr. BLAKESLEE.—We offer them and ask that they be marked respectively Defendant's Exhibit 7, 8, and 9, and marking the one marked A as 7.

Mr. LYON.—We object to them on the ground that no foundation is laid, incompetent, irrelevant and immaterial and not identified with this litigation.

Mr. BLAKESLEE.—We have not the pumps here and we offer this with the testimony of the witness, as being the best evidence under the circumstances, with probably a further showing [494] of that pump, in connection with other testimony.

Mr. LYON.—These photographs don't show anything of the mechanical construction.

Mr. BLAKESLEE.—To reinforce the witness' testimony, to show that a physical thing was installed there. We have had words and drawings so far and this is a showing to further represent the fact of installation, to show that there was a pump there. There is a pump head shown there.

Mr. LYON.—We object then upon the further ground that it is incompetent, no foundation laid, not the best evidence and no foundation laid for the introduction of secondary evidence. As far as the record shows, if there was any pump installed at that time, it is still in the same well.



(Deposition of H. C. Robb.)

Mr. BLAKESLEE.—We cannot bring the pump here and it is obvious that this is the best evidence that can be produced before this court at this time. Of course, if the Court will view that pump, that would be the best evidence. But at the place of trial we cannot produce any better evidence than that. It would be impossible to bring such a thing as that into the courtroom. It is a pump two hundred feet long.

The MASTER.—That is not the point about it. The photographs don't describe any particular thing.

Mr. BLAKESLEE.—We admit that, but it shows that—it visualizes the installation. It shows the belt driven top; it shows an installation. It does not follow that the photograph must show all the details of the defense. The picture of the building in which the pump was installed is corroboratory. It shows part of the thing which was installed.

The MASTER.—Take this one marked B especially. If there is anything that has to do with the pump there, I don't see it.

Mr. BLAKESLEE.—Here is the pump head. There are parts [495] of the installation. Of course, by a photograph taken now, you could not show the features that are in the well. It would be impossible. You could not show the runners. You could not show the enclosing casing except the top, and the photograph shows the top.

Mr. LYON.—I call attention to that portion of the objection which objects to it as secondary evi-

(Deposition of H. C. Robb.)

dence, for the reason that there is nothing to show that whatever, if anything, was installed at the alleged time it does not exist in the same condition to-day. I am not making that objection captiously, because, if my information is correct, very material testimony may develop from an attempt to show whether or not that installation was maintained or whether it was changed.

The MASTER.—That is one of the troubles, then. This does not fix any time.

Mr. BLAKESLEE.—It fixes the year 1904.

The MASTER.—He said he took it at the time of installation. He says these memorandums were put on months afterwards.

Mr. BLAKESLEE.—But he says he took them in January, 1904, and that date should have been January, 1904, instead of 1903.

The MASTER.—They will be admitted subject to the objection. If there has been a change, that is the best evidence of what was there at the time. They will be received subject to the objection simply, but the question of the objection is not passed upon.

Q. (By Mr. BLAKESLEE.) May I ask one further question? Please state again, or state, if you have not, what date it was on which you took these photographs? A. In January, 1904.

Mr. BLAKESLEE.—The offer goes as to the obverse and reverse side, or anything that appears. (The said photographs are [496] marked as requested, Defendant's Exhibits 7, 8 and 9, respectively.)

(Deposition of H. C. Robb.)

Cross-examination.

(By Mr. LYON.)

Q. Mr. Robb, according to your present recollection, when was it that you first went to work for the Byron Jackson Machine Works?

A. In 1888 or '89.

Q. What had you been doing just previous to going to work for the Byron Jackson Machine Works?

A. I had been working for another firm in another part of town.

Q. What firm?

A. The Simonds Saw Company.

Q. When did you leave that concern?

A. I don't remember the year or the date, but it was about that time; it was in the late eighties.

Q. In other words, the best of your recollection is that it was somewhere in the last few years of the eighties that you left that concern and went to work for the Byron Jackson Machine Works?

A. Yes, sir.

Q. You cannot tell whether it was 1887, '88, '89 or '86? A. It was not as far back as 1886.

Q. That is the best answer you can give, and as near as you can fix the date? A. Yes, sir.

Q. When you first went to work for the Byron Jackson Machine Works, what did you do?

A. Running a lathe.

Q. When did you first commence doing outside work for them in the installation of pumps? [497]

A. About two years after I went to work for them.

(Deposition of H. C. Robb.)

Q. What year would that be?

A. I have not taken time to figure it up.

Q. What is your recollection? That is what we are asking you? A. I don't know.

Q. What business were you engaged in with the Byron Jackson Machine Works in 1900?

A. Both inside and outside work.

Q. You are sure of that? A. Yes, sir.

Q. What kind of pumps were you working on for them, on outside work in 1900?

A. All sizes of pumps, horizontals and verticals.

Q. Can you give us the name of any installation that you made or worked on for the Byron Jackson Works during 1900? A. No.

Q. Can you give us the name of installation of pumps that you worked on for the Byron Jackson Works in 1901? A. No.

Q. 1902? A. No.

Q. Have you any memoranda made at the time by which you can fix a memory of the date on which you left San Francisco to go to Milwaukee on this Pabst installation? A. Yes, sir.

Q. What memorandum?

A. The memorandum consists of a memory regarding how I left the San Joaquin Valley.

Q. Then you have no written memorandum of any kind? A. No. [498]

Q. Have you any written memoranda of any kind made at the time by which you refresh your recollection as to when you returned from Milwaukee after the completion, as you say, of that installation? A. I cannot recall anything at present.

(Deposition of H. C. Robb.)

Q. Have you any means by which you can fix the date upon which you made the written entries upon the photographs Defendant's 7, 8 and 9?

A. No.

Q. To whom did you report when you first reached Milwaukee?

A. The Pabst Brewing Plant.

Q. What was the name of the party to whom you reported?

A. It was the superintendent of the Mechanical Department. I don't remember his name.

Q. Can you give us the name of anyone connected with the Pabst Brewing Company that you saw, or had business with during that installation?

A. Gustave Pabst, president of the company.

Q. Anyone else?

A. That is all the names I remember.

Q. What is the name of the mechanical engineer of the Pabst Brewing Company at that time?

A. I have tried several weeks to remember the name and I cannot remember it.

Q. He inspected and supervised that installation, didn't he? A. Yes, sir.

Q. You don't remember his name?

A. No, sir.

Q. Can you describe him, as to what kind of a looking man he was? [499]

A. I can describe some characteristics that he had.

Q. What were they?

A. He had a habit of shrugging his shoulders, and he had a chicken ranch he was taking care of. That was his hobby outside of his line of work—

(Deposition of H. C. Robb.)

those two characteristics were very prominent.

Q. That is the best description you can give us by which we could identify him?

A. Yes, sir; I think it is.

Q. Will you describe to us the Byron Jackson Machine Shop as it existed in 1901?

Mr. BLAKESLEE.—We object to that as indefinite. It does not appear whether counsel means the structure of the buildings, its dimensions or its contents or its equipment.

The MASTER.—This cross-examination of the recollection of the witness. The objection is overruled.

Mr. BLAKESLEE.—Exception.

A. In what respect?

Q. (By Mr. LYON.) All that you can remember about it.

Mr. BLAKESLEE.—The same objection.

The MASTER.—Answer the question. Was it a nine story building or a twenty.

A. It was a two-story building, with a foundry, warehouse, a woodworking department, a pattern-shop, a blacksmith-shop on the corner of the street. If you want a description of the interior I can give you that.

Q. Is that in 1901?      A. Yes, sir.

Q. Do so.

A. There were two boring-mills, a horizontal mill—

Q. Give us the size of the shop, if you can, and tell [500] us how it was arranged and how high it was, if you can, from the floor of the shop on

(Deposition of H. C. Robb.)

the first floor to the ceiling or floor of the second story.

A. The ceiling in the machine-shop was about twelve feet.

Q. What was the height of the ceiling from the floor on the second floor?

A. About fifteen feet.

Q. How large a room was the main room of the machine-shop in 1901? A. 75x150.

Q. Were there any changes made in the size of that machine-shop room or of the building itself, or of the height of the ceilings that we have referred to, during 1901, '02, '03, '04, '05 and '06?

A. No. In 1906 the fire took place and wiped it out. But there were not other improvements during that period.

Q. During all that time this shop remained the same without any changes in it?

A. No changes of any account.

Q. In the same building with the machine-shop, what other parts of the Byron Jackson Machine Works plant were there located in 1901?

A. The blacksmith-shop.

Q. How big a room was that?

A. It was part of the main building, part of the main structure. There was no partition between.

Q. Just open right through from the machine-shop into the blacksmith-shop? A. Yes, sir.

Q. Where was this shop located?

A. Sixth and Bluxome Street, San Francisco.  
[501]

Q. On which street did the shop face?

(Deposition of H. C. Robb.)

A. Both.

Q. Which side was the machine-shop?

A. Both, Sixth and Bluxome.

Q. In which direction from the machine-shop was the blacksmith-shop?

A. Facing on Bluxome Street.

Q. How did you get upstairs to the second floor of the building at that time—1901?

A. Two stairways and an elevator.

Q. Where were the stairways?

A. One off Sixth Street, and the other was an interior stairway, alongside of the elevator.

Q. Where was the elevator arranged in that building?

A. Close to the boiler, behind the engine.

Q. How far would that be from the Sixth Street entrance?     A. About seventy-five feet.

Q. And how far from the Bluxome Street line?

A. About the same distance; possibly a hundred feet, and the elevator was outside of the machine-shop proper.

Q. Did you say you saw a pump standing installed in 1901, somewhere in that shop?

A. Yes, sir.

Q. Whereabouts in the shop was it?

A. Alongside of the tank—the testing-tank.

Q. Where was the testing-tank?

A. At the foot of the stairway.

Q. Right near this interior stairway?

A. Yes, sir.

Q. How long was this pump and its drive shaft?



(Deposition of H. C. Robb.)

A. When I saw it it was laying on the floor horizontally. [502]

Q. When was it you saw it first?

A. When I came in from the San Joaquin Valley in 1903.

Q. When was it that you came in from the San Joaquin Valley in 1903? A. In October.

Q. That is the first time you saw that pump?

A. I don't know that I saw that particular pump. You asked did I see any pump.

Q. This particular pump that I now refer to that you say you saw in 1903 when you came in from the San Joaquin Valley, that was the first time you saw that particular pump, was it? A. No.

Q. When had you seen it prior to that time?

A. I cannot say.

Q. In what condition was it when you saw it prior to the time?

A. Lying on the floor in a horizontal position.

Q. What had you been doing in the San Joaquin Valley?

A. Installing pumps for the Byron Jackson Machine Works.

Q. For whom had you installed any pumps during that trip?

A. The Mount Whitney Power Company.

Q. What kind of pumps were they?

A. Vertical, in frames.

Q. Pit pumps? A. Yes, sir.

Q. Did you have any kind of talk with anybody about this pump that you have referred to before

(Deposition of H. C. Robb.)

you left in 1903 to make the installation in the San Joaquin Valley?

Mr. BLAKESLEE.—Objected to as calling for a conversation which is obviously not proper, there being no showing that any of the parties were present. [503]

The MASTER.—Answer the question yes or no.

A. No.

Q. How long before you left on this trip to Milwaukee to make this Pabst installation, was it that you had been notified or informed that you were going there? A. About sixty days.

Q. What instructions had been given you in regard to such installation before you left?

A. That it was to make the tubing and shafting in Milwaukee and finish the pump and install it and get it accepted.

Q. Who gave you those instructions?

A. Byron Jackson.

Q. How did he give you those instructions?

A. Verbally.

Q. Did he show you any of the tracings or blue-prints? A. Yes, sir.

Q. Those that you have identified in your testimony? A. Yes, sir.

Q. And it was by means of those that he explained to you the construction that was to be installed by you? A. Yes, sir.

Q. And all of the instructions you had then in regard to that installation or that character of installation at that time, were verbal by Mr. Byron Jackson in connection with the blue-prints or

(Deposition of H. C. Robb.)

tracings which you have identified?

A. Byron Jackson and Frank Jackson, superintendent of the company.

Q. They were all verbal in connection with the blue-prints or tracings which you have identified?

A. Yes, sir.

Q. No talk about any pump itself? They didn't show you [504] any pump that was erected like the one you were to erect, did they?

A. I don't remember anything of that kind.

Q. You don't remember anything about their showing you any pump at that time?

A. There was a pump and I helped test the pump that was to be installed for the Pabst well.

Q. That was the Pabst pump itself?

A. Yes, sir.

Q. No other pump? A. No.

Q. This Pabst installation was a special installation and a new one, wasn't it?

Mr. BLAKESLEE.—Objected to as calling for a conclusion as to what the witness might mean when he answers it. It does not call for a statement of facts.

The MASTER.—The objection is overruled.

A. It was new of that particular type.

Q. Just what do you mean by your last answer—that is "it was new of that particular type"?

A. It was to go in a bored well hole and it was new in that respect.

Q. In other words, that was the first bored well pump that you had installed for the Byron Jackson Machine Works? A. Yes, sir.

(Deposition of H. C. Robb.)

Q. And it was the first one that you know of that the Byron Jackson Machine Works had put out, was it?     A. Yes, sir.

Q. Who besides Frank Jackson and Byron Jackson do you remember that was connected with the Byron Jackson Machine Works in 1900?

A. I know of the men in the shop and their names and the foreman. [505]

Q. Who was the foreman?

A. A man named Filliotti.

Q. Of what was he foreman?

A. Foreman of the machine-shop.

Q. Who was foreman of the blacksmith-shop in 1900?

A. There was not any. There was only one fire.

Q. What was Mr. Frank Jackson's position at that time in 1900?     A. Superintendent.

Q. Whom else can you name that was connected with the Byron Jackson Machine Works in 1900?

A. Ralph Gibson was teamster. John Thompson, afterwards foreman; Fred Bonner was afterwards a foreman and Harry Mitchell was engineer.

Q. Is that all you remember in 1900 as to who was employed or had any connection with the Byron Jackson Machine Works, during the year 1900?

A. Mr. Boyer was manager in the office.

Q. Anyone else?

A. I could think up several other names if I have time to do it.

Q. Those are all you recall at the present time?

A. Just offhand, yes. Up to the time of the strike, yes, sir.

(Deposition of H. C. Robb.)

Q. When was the strike?     A. 1901.

Q. What time of the year?     A. May.

Q. How long did that strike last?

A. Six months.

Q. How many of these men left at the time of the strike? [506]     A. I don't know.

Q. Did you continue to work for the Byron Jackson Machine Works during that strike?

A. No; I was out.

Q. How long were you out?     A. Six months.

Q. Who was foreman of the shop when you returned after that strike?     A. John Thompson.

Q. What John Thompson was that?

A. A man that had been a journeyman and was appointed foreman.

Q. Foreman of what portion of the shop?

A. The machine-shop.

Q. Who was the general foreman?

A. There wasn't any general foreman. Frank Jackson was superintendent and John Thompson was under him.

Q. Now, let us take 1902. How many of the men that you have mentioned were with the Byron Jackson Machine Works in 1902?

A. I have nothing to recall it with.

Q. How is it that you can recall 1901 better than 1902?     A. Because of the strike.

Q. And is your memory as good as to 1900 as it was in regard to 1901 in that regard?

A. I think so; yes.

Q. Did you ever know a man there by the name of Julius Herstel?     A. No.

(Deposition of H. C. Robb.)

Q. Wasn't there a machinist by the name of Julius Herstel in the machine-shop of the Byron Jackson Machine Works in 1903? [507]

A. There might have been; I don't know.

Q. Didn't he do work on this Pabst pump?

A. I don't think so.

Q. What position did Julius W. Herstel hold with the Byron Jackson Machine Works?

A. Foreman.

Q. When?

A. I couldn't say what year.

Q. Was it in 1903?

A. I think it was earlier than that.

Q. How much earlier? A. I don't know.

Q. Wasn't he foreman in 1900?

A. I couldn't say the date.

Q. Wasn't he foreman in 1901?

A. I couldn't say the date of that. Just a minute. He was.

Q. Was he foreman in 1899? A. I can't say.

Q. Did you ever meet a man by the name of Palsmaier connected with the Byron Jackson Machine Works? A. Yes, sir.

Q. What was his position?

A. Salesman at that time.

Q. At what time?

A. At the time you speak of, in 1900 and 1901.

Q. And 1902? A. About that time.

Q. When was it you first met Mr. Palsmaier, according to your best recollection?

A. I should say it was along in 1904 or '05. [508]

(Deposition of H. C. Robb.)

Q. Can you state positively that he was not the salesman who made the San Joaquin sale and was up there at the time you made the installation?

A. Yes, sir; he was not.

Q. Who was the shop foreman following Mr. Cuthbertson? A. Filliotti.

Q. Who followed Mr. Filliotti?

A. Fred Bonner.

Q. How long did Fred Bonner remain foreman?

A. More than a year, but how much more I don't know.

Q. When did he become foreman?

A. I can't state the year.

Q. During what time was Mr. Filliotti foreman?

A. I couldn't state the year either.

Q. Who followed Mr. Bonner as foreman?

A. John Thompson.

Q. When did he became foreman?

A. I don't know the year.

Q. You are talking now about foreman of the machine-shop, are you? A. Yes, sir.

Q. Who succeeded Bonner?

A. John Thompson.

Q. Who succeeded Thompson?

A. He was foreman up to the time I left.

Q. And when did you leave?

A. Twelve years ago.

Q. That would be 1908? A. Yes, sir.

Q. What time in 1908? A. January. [509]

Q. You have named all of the foremen of that Byron Jackson Machine Works that you can now recollect, have you? A. Yes, sir.

(Deposition of H. C. Robb.)

Q. From the time you went there until you left in 1908? A. Yes, sir.

Q. Let me suggest another name to you. Do you know a man by the name of Yeatman?

A. Yes, sir.

Q. He was shop foreman there for awhile, wasn't he? A. No.

Q. What position was he in? A. Salesman.

Q. He was not a shop foreman at any time?

A. No.

Q. Are you sure Mr. Yeatman did not succeed Mr. Cuthbertson as shop foreman of the Byron Jackson Machine Works?

Mr. BLAKESLEE.—We object. He says he never was at any time.

The MASTER.—Go on with the cross-examination.

Q. (By Mr. LYON.) Do you know where Mr. Yeatman is now?

A. Not positively, only by reputation.

Q. What is your best information?

A. At The United Iron Works.

Q. At Oakland, California? A. Yes, sir.

Q. How long since you have seen him?

A. Eight years or more.

Q. Gustave Pabst is the only man you can name that you saw while you were East on this Pabst installation? A. And Andrew Kopperrude.

Q. Anyone else? [510]

A. That is all the names I can recall.

Q. You don't know the name of any man who had supervision of such installation, over you or whose



(Deposition of H. C. Robb.)

business it was to approve such installation?

A. It was only the manager, and I don't recall his name.

Q. You mean the manager of the Pabst Company?

A. Yes, sir; the manager of the mechanical department.

Q. You made an affidavit in this case at the request of Mr. Montgomery, one of the defendant's attorneys, did you?    A. Yes.

Q. From whom did you secure the blue-prints which was attached to that affidavit?

A. I don't remember the blue-prints at all.

Q. Is that a blue-print of one of the prints or one of the tracings that you have identified here in your testimony?    A. I don't know. I don't recall it.

Q. You don't know who placed that blue-print before you that is attached to your affidavit?

A. No.

Q. Did you talk with Mr. Keating in November of this year in regard to this Pabst installation?

A. No; I never met him.

Q. I mean 1919?    A. No; I never met him.

Q. Whom else did you talk with in regard to this matter besides Mr. Montgomery?

A. Frank Jackson.

Q. Anybody else?    A. Only with counsel.

Q. Anyone else?    A. I think not. [511]

Q. You have been over these blue-prints and tracings more than once before giving your testimony here, have you not?    A. No.

Q. Then the blue-print attached to your affidavit

(Deposition of H. C. Robb.)

was the only blue-print that was shown you before you gave your testimony here?

A. I don't recall it at all, that I had seen any blue-print in connection with the affidavit.

Q. What do you recall having seen in the line of blue-prints or tracings while talking with Mr. Montgomery, Mr. Frank Jackson or Mr. Jackson before giving your testimony?

A. I didn't see any blue-prints.

Q. Or any tracings? A. No, sir.

Q. Did you not see any blue-prints at all while talking with any of these men?

A. Only Mr. Frank Jackson.

Q. Those were the only blue-prints you saw?

A. Yes, sir.

Q. What prints were those?

A. Of that plant.

Q. You have no recollection whatever of having made an affidavit in this case on December 17, 1919?

A. Yes, sir.

Q. Was there a blue-print attached to that affidavit?

A. I don't recall at this time that there was.

Q. Prior to making that affidavit you had talked with Mr. Frank Jackson, had you? A. Yes, sir.

Q. What tracings or blue-prints had you and he looked at before making that affidavit? [512]

A. Not any.

Q. None whatever? A. No.

Mr. LYON.—In connection with the cross-examination of the witness, I offer in evidence the affidavit of the witness made in this case and sworn to

(Deposition of H. C. Robb.)

on December 17, 1919, before Charles C. Montgomery, a notary public in and for Los Angeles County, State of California, and the blue-print attached thereto.

Q. I show you a print which is attached to your said affidavit. You talked that print over with Frank Jackson, had you, before you made that affidavit?

A. At this time I have no distinct recollection that I did.

Q. Did you or did you not talk it over?

A. I don't know; I have no recollection at this time of having done so.

Q. You have no recollection at this time that the print was even attached to the affidavit? Is that correct?

A. That is correct.

Q. Did you have anything to do with the Schlitz Brewing Company installation?

A. No.

Q. And except as you casually saw something being made in the Byron Jackson Machine Works you know nothing about a Schlitz Brewing Company installation?

A. I got the order for it.

Q. When?

A. In 1904.

Q. What time in 1904?

A. April.

Q. Was it of the same identical construction as you [513] installed for the Pabst Brewing Company?

A. No; it was a smaller capacity.

Q. Any other changes in it?

A. I think not.

Q. How many stage pump was it?

A. Three.

Q. How many pumps?

A. One.

Q. You say that the only trouble you had with this Pabst installation while you were there was

(Deposition of H. C. Robb.)

with the oil device. Please tell us what that trouble was and what you did. Describe it in detail.

A. The oil was found to be an objection to the cleansing of the kegs and we substituted water for oil.

Q. How did they substitute water for oil?

A. Put water through the same channels that the oil formerly took.

Q. Describe that, please.

A. There was a can containing oil under first conditions and the oil can was emptied and water-pipes took the place of it. The water was first run through a settling chamber to exclude any foreign substance that might be in the water.

Q. You say you brought back the payment for this Pabst installation with you?

A. The last payment.

Q. How much was that last payment?

A. I don't remember the amount. It was more than \$500.00.

Q. Was it a thousand dollars?

A. I don't think it was. It was between \$500.00 and \$1,000.00.

Q. How much was the total contract? [514]

A. I don't remember.

Q. How much had been paid previous to that last payment? A. I don't know that, either.

Q. All you remember, then, is that you brought home some payment. Isn't that true?

A. The truth is that the last payment was brought home by me and amounted to between \$500.00 and \$1,000.00.

(Deposition of H. C. Robb.)

Q. You have a definite recollection that it was over \$500.00? A. Yes, sir.

Q. And a definite recollection that it was under \$1,000.00? A. Yes, sir.

Q. In what form was that brought back by you—by bank draft or the personal check of the Pabst Brewing Company, or how?

A. It was a check signed by the president of the Pabst Company, Gustave Pabst.

Q. And drawn to the Byron Jackson Machine Works? A. Yes, sir.

Q. Did you take part in any other installation for the Pabst Brewing Company besides the first one you mentioned in your testimony? A. No.

Q. Did you go back there and install any other pumps? A. No.

Q. Did you make the installation of the pumps for the Schlitz Brewing Company? A. No.

Q. Did you have anything to do with it? A. No.

Q. Then, you were in error in your testimony when you stated that you installed the pumps for the Schlitz Brewing Company? [515] I call your attention to the following questions and answers: "Q. Do you remember the names of any persons or parties for whom the enclosed shaft pumps were built for the Byron Jackson Machine Works after you returned from Milwaukee? A. I can state those that I installed pumps for. Q. State it. A. The Lagrange Service Company, the Schlitz Brewing Company at Milwaukee, the Southern Pacific Company in Santa Clara County, California, the Santa Fe Railroad at Richmond."

(Deposition of H. C. Robb.)

Q. You will correct that and say that you had nothing to do with the Schlitz installation?

A. Yes, sir.

Q. Did you have to do with the Lagrange Service Company installation?     A. Yes, sir.

Q. What year was that?     A. 1905 and '06.

Q. What time in 1905?

A. I don't remember the month.

Q. Did you have to do with the installation for the Southern Pacific Company at Santa Clara County?     A. Yes, sir.

Q. What time of the year was that?

A. I don't remember.

Q. What year was it when the Santa Fe Railroad installation was put in at Richmond?

A. I couldn't tell you that, either. It was about 1907.

Q. You say that when you returned from Milwaukee you saw a pump on the floor of the shop and that you were given the upper part of the frame to make other tests with, but not the pump itself?

A. No; that was when I returned from the San Joaquin [516] Valley.

Q. What year?     A. 1902.

Q. How do you fix that date?

A. Because I was in the San Joaquin Valley on several occasions and there was trouble with the oil bowls, and that was what I was working on.

Q. Was that the same trip that you have last referred to on your cross-examination this morning?

A. No.

Q. That is another trip, is it?     A. Yes, sir.

(Deposition of H. C. Robb.)

Q. How many times did you make trips to the San Joaquin Valley on installations during 1902 and '03? A. Three or four.

Q. Not more than that?

A. I think that is about all.

Q. When did you make those trips?

A. At different seasons of the year.

Q. Your recollection does not enable you to fix those definitely, one way or the other, does it?

A. No.

Q. This pump that you saw was on the floor, lying on its side, I think you said? A. Yes, sir.

Q. How long did it remain lying there on the floor to your knowledge?

A. I saw it several times as I came in and out of the shop on trips.

Q. Did you ever see it anywhere else than lying on its side in the shop? [517]

A. No.

Q. Referring to this pump that you say you installed for the Pabst Brewing Company, Mr. Robb, you referred to a stuffing-box at the top of the pump head. Please explain to us how you assembled that stuffing-box on that pump and what you did with it in that installation?

A. It was to confine the water to the annular space between the tube and the inside of the column.

Q. What did you do with the stuffing-box? Was it loose or screwed down tight?

A. It was filled with packing and held by three studs and glands. (The question is read.)

A. It was screwed down with the studs or nuts.

(Deposition of H. C. Robb.)

Q. You have been referring to the stuffing-box at the top, have you not?     A. Yes, sir.

Q. Below that was there any other stuffing-box?

A. Yes, sir.

Q. Where was that next stuffing-box?

A. At the head of the pump.

Q. Now that one?

A. It was screwed down an internal thread in the casing.

Q. And that was a tight stuffing-box?

A. Yes, sir; with a screw.

Q. How tight did you screw that particular stuffing-box down?

A. Tight enough to hold the packing in.

Q. Did you bind the shaft at all?     A. No.

Q. The shaft was free to turn through that stuffing-box?     A. Yes, sir. [518]

Q. It was just about as free as through a brass bearing—the shaft was—through that particular stuffing-box, that you had assembled?

A. It would be a little tighter than a free box.

Q. And after the pump would run a few weeks it would be practically as free as a free box?

A. Yes, sir.

Q. During any of the time that you were at Milwaukee was the pump pulled in that well?

A. Yes, sir.

Q. How many times?     A. One.

Q. For what purpose?

A. To repair a broken shaft.

Q. What was the occasion of the broken shaft?

A. It just broke.



(Deposition of H. C. Robb.)

Q. Wasn't that due to the shaft being somewhat out of alignment, or at least, isn't that what you thought at the time?

A. Not that I have any recollection of giving any reason for it.

Q. You don't recollect giving any reason for it? That was the driving shaft of the pump, and it broke and you had to pull the installation out, and what did you do?

A. Replaced the broken shaft with a new one.

Q. Where did it break?

A. About seventy-five feet from the surface.

Q. What kind of bearings then did this drive shaft of this Pabst pump installation have, as you installed it?

A. The cast-iron container contained babbitt. The spider was a babbitted lining.

Q. Did you babbitt the box? [519]

A. No; they were babbitted in San Francisco.

Q. Was the babbitt pinned in in the bearings?

A. No; poured in a bored hole.

Q. The walls of that hole were rough, so that they would hold the babbitt, were they? A. Yes, sir.

Q. Now, Mr. Robb, when you substituted water for oil in this Pabst installation, did you make any changes at all in the pump mechanism?

A. No—yes.

Q. What.

A. A jam-nut on the gland at the bottom.

Q. What did you do with that?

A. A jam-nut on the gland at the bottom of the pump.

(Deposition of H. C. Robb.)

Q. You pulled the pump out again?

A. No; that was at that time when the shaft was repaired.

Q. What change did that effect?

A. It held the gland so it could not get loose.

Q. What gland do you refer to?

A. The one at the top of the pump casing.

Q. That was down in the well?

A. Yes; two hundred feet from the surface.

Q. What change did that effect in the operation at all?

A. None, only to keep the gland from getting loose.

Q. Then you found that the gland was loose when you pulled the pump, did you?     A. Yes, sir.

Q. What is your recollection with regard to the stand of water in this Pabst well? How high up was the water level before you started the pump?

A. One hundred feet. [520]

Q. How far did the level of the water fall when the pump went into operation and use after that?

A. Two hundred feet.

Q. It fell down below the top of the first stage of the pump?     A. Yes, sir.

Q. How do you know that?

A. By means we used to determine the level.

Q. What means were those?

A. That is for others to answer, unless I am compelled to answer I don't care to do it.

Q. Do you mean you don't know?

A. I do know.

Q. Does it involve your invention?

(Deposition of H. C. Robb.)

A. It is what is known in the trade as a technical secret, developed by years of practice, and we don't care to give it up.

Q. Whose property is that secret?

A. The Byron Jackson Machine Works and those who were using it at that time.

Q. (By the MASTER.) Were other people using it at the same time? A. I don't know.

Q. Have they used it since? A. I have; yes.

Q. (By Mr. BLAKESLEE.) Was it in general use in pump installations? A. I don't think so.

Q. Are you using that method to-day?

A. Yes, sir.

Mr. LYON.—That question may become a material one. I think we are entitled to know, so that the Master may determine [521] hereafter the weight of the testimony of the witness, by what means they determined that level.

Mr. BLAKESLEE.—We don't think it is material.

Mr. LYON.—We have not any knowledge of any trade secret to which the witness refers and we are not searching for that. We are only testing this witness as to this installation.

Mr. BLAKESLEE.—We don't think it is material to the issues of this case what the water level was after the pumping operations.

The MASTER.—Anything that took place at that time is material. It reduced the water level. How they did it or what they did, and whether it was just a chance or not.

Mr. BLAKESLEE.—It seems to me, beyond the

(Deposition of H. C. Robb.)

fact that the pump delivered water, there would be no materiality in the level of the water during the pumping operations, and we object to the question on that ground. The water must be supplied to the bowls or it could not be delivered at the top.

Mr. LYON.—That has all to do with this enclosed line shaft feature and has become material in every one of these cases before and it is liable to be in this case, and for that reason I would like to have the witness answer the question as to what means they used to determine the drop of the level of the water, due to the action of the pump, so that we may be able to ascertain what value is to be attached to his testimony in that regard.

Mr. BLAKESLEE.—The Getty decision, as we understand it, has limited the patent in the respect urged here, to the nature of the seal at the bottom of the enclosing casing, but we do not see that that makes this question material.

The MASTER.—I can't think of any reason why something that has been in operation for twenty years is not to be talked about, and it does seem to me that it is part of the things the [522] plaintiff is entitled to know.

Mr. BLAKESLEE.—Ordinarily a witness is protected from divulging a trade secret which may be of value in his business or that of his employer's.

The MASTER.—They have never claimed it in the Byron Jackson case before. There was nothing said about reducing the water levels except by a pump.

Mr. MONTGOMERY.—What difference does it

(Deposition of H. C. Robb.)

make how they determine the drop of the level?

The MASTER.—It is where they did it as well, as determining it.

Mr. MONTGOMERY.—As I understand it, what means did they have to determine the water level.

The MASTER.—That is just the same thing.

Mr. MONTGOMERY.—I cannot see the materiality of the water level at all, if the pump delivered water.

Mr. BLAKESLEE.—As long as the water found its way through the bowls, so that it could be elevated, that is all that is material.

The MASTER.—It becomes material only as part of the transaction at the time. I don't care how many pumps they have now, reducing the water level, or what means they have for reducing the water level, but I do think that what they seek to know is material as part of the very things he is testifying about.

Mr. MONTGOMERY.—I don't think they should be allowed to use the process of the court to elicit trade secrets unless they show very distinctly what the materiality is. I can't see any materiality, but that may be due to my ignorance of the construction here.

Mr. BLAKESLEE.—One of the troubles in this case is that counsel has never vouchsafed an opening statement to guide your [523] Honor or any of us as to what he contends.

The MASTER.—I suppose he is meeting the defense you rely upon. We want all the facts.

Mr. BLAKESLEE.—There has been no opening

(Deposition of H. C. Robb.)

statement made to guide us and I don't know what counsel contends in this respect. It seems to me the materiality of this is much lighter in the scale than the witness' desire to maintain his trade secret. Of course we, as attorneys for defendants in the case, don't care. It is only for the protection of the witness in his proper relation with his own affairs. From our viewpoint we make no objection to the evidence.

The MASTER.—Didn't everybody in the Pabst Brewing Company see this experiment?

A. The manager of the mechanical department.

Q. He saw what was done? A. Yes.

Mr. LYON.—It could not be much of a trade secret if the supervising engineer saw everything that was done there.

Q. (By Mr. BLAKESLEE.) Was it your secret at the time and did you use it as your secret knowledge?

A. No; it was on instructions of the Byron Jackson Machine Works.

Q. Did you enjoin the mechanical man of the Pabst plant to retain it as a secret? A. No, sir.

Mr. BLAKESLEE.—We will have to pass it up to your Honor.

Mr. LYON.—The witness says himself there was injunction of secrecy at that time.

The MASTER.—And the engineer in charge of the works knew about it. I don't think it is a secret. The witness will answer the question. [524]

(Question is read by the reporter.)

A. With a 1/4-inch pipe that was let into the well.

(Deposition of H. C. Robb.)

Q. (By Mr. LYON.) How did you use such  $\frac{1}{4}$ -inch pipe with which you measured the level of the standing water in the well?

A. By the pressure on it.

Q. Air pressure? A. Yes, sir.

Q. How did you by such means indicate the water level? Explain that to us.

A. It was done to satisfy the mechanical engineer and was accepted.

Q. I ask you how it was done and not for your conclusion.

A. I ask the protection of the court.

The MASTER.—I have said that I did not see that you needed any protection. The objection is overruled.

Mr. MONTGOMERY.—Might not that be deferred until this afternoon and let us see what the thing is and what they are driving at?

Mr. LYON.—There is another thing. I don't believe the man can explain it.

The MASTER.—What did you do at Milwaukee to test that well and the water level?

A. We measured the water level by means of a  $\frac{1}{4}$ -inch pipe and an air pipe. That was manipulated by myself and the mechanical engineer, and the pump was accepted upon that test.

Q. (By Mr. LYON.) How did you manipulate this air pressure in the  $\frac{1}{4}$ -inch pipe to indicate that water level? Explain in detail what you did at that time.

The MASTER.—What you did at Milwaukee is what I am getting you to tell. [525]

(Deposition of H. C. Robb.)

A. We put a pressure gauge on the air line and pumped air pressure into it and noticed the amount that the gauge indicated.

Q. Well, Mr. Robb, tell us just what your water level indications were in that well after this test? First, what did it show the water level to be before the pump was started, and then what was the water level after the pump had been in operation, say for twenty-four hours?

A. One hundred feet when the pump was standing, and two hundred feet when it was running.

Q. The portions of the pump were out of water or above the water level when the water level had so fallen to two hundred feet?

A. The bottom bowls were practically level with the water.

Q. The bottom bowls were practically level with the water?     A. Yes, sir.

Q. How many bowls then were out of the water?

A. Three.

Q. You frequently stopped and started that pump when you were installing it and before it was accepted?     A. Yes, sir.

Q. Approximately how many times?

A. Probably a dozen.

Q. You didn't put in all your time while you were with the Byron Jackson Machine Works in 1900, '01, '02 and '03, outside of the shop putting in installations, did you?     A. No, sir.

Q. What did you do while you were in the shop?

A. Ran a machine or worked on the floor.

Q. In other words, you were working as a machin-



(Deposition of H. C. Robb.)

ist [526] in the shop? A. Yes, sir.

Q. And doing what any of the rest of the machinists or anybody called upon you to do?

A. Only the foreman.

Q. That is what I mean. But you were working as a regular machinist, doing anything or everything that was to be done? A. Yes.

Q. Then your job while you were in the machine-shop was that, practically, of a handy man in the shop? A. No; as a journeyman machinist.

Q. Then you were not a specialist in the shop upon any particular machine tools?

A. No; I was what they called an all-around man.

Q. The shaft casing of this Pabst pump was made in Milwaukee?

A. The machine work was done in Milwaukee.

Q. At what shop? A. Andrew Kopperrood.

Q. Under whose instructions? A. Mine.

Q. Anybody's else? A. No.

Q. No one else either on behalf of the Pabst Brewing Company or of the Byron Jackson Machine Works? A. No.

Q. You had sole charge of it? A. Yes, sir.

Q. You have given us now the name of every person that you can recollect who had anything to do with this Pabst installation, or the supervision of it or acceptance of it, have you? [527]

A. Byron Jackson saw the tubing and shafting before it was ready to assemble.

Q. I understand the names you have already named. But my question is, there is nobody else that you have not named heretofore that you can

(Deposition of H. C. Robb.)

name that either had anything to do with the making or installation or acceptance of the installation or its inspection, or anything of that kind?

A. No.

Q. How long after you got this pump fully installed for the Pabst Brewing Company, was it before you left Milwaukee?

A. I started the pump the first week in January and I left in April.

Q. What time in January, according to your recollection, was it that you say they started the pump? A. The first week.

Q. That was in continuous operation from then on till April?

A. With the exception of the time of making the repairs, yes.

Q. How much time was spent in making repairs?

A. About two weeks.

Q. When were these repairs made?

A. I don't recall just the time.

Q. Were they made in January, February, March or April? A. I think in January.

Q. When was it that you quit using oil and commenced using water as a lubricant?

A. About three weeks after we started.

Q. In other words, that would be the latter part of January, 1904? A. Yes. [528]

Q. What other repairs did you have to make on that pump besides pulling this pump once, as you have told us about in your cross-examination here this morning?

A. We found the setscrews that were holding the

(Deposition of H. C. Robb.)

spiders had no jam-nuts to hold them, and we took the setscrews off and put on screws with jam-nuts.

Q. In other words, the setscrews would not stay in place, and the alignment would not stand?

A. No; they were a loose fit in the casing.

Q. And the result of that was that the shaft and casing did not stay aligned truly?

A. I couldn't say that.

Q. Didn't the enclosing casing break in two as the result of being out of alignment?     A. No.

Q. Not at all?     A. No, sir.

Q. How many times did you pull out that pump on account of these setscrews?

A. They were made at the time the shaft was repaired. All the repairs that I speak of were made at that time.

Q. You only pulled the pump once during all the time you were there?     A. Yes, sir.

Q. Is it a fact that when you pulled this pump that one time you found the joints of the casing loose, and had to tighten them up?

A. The casing was not loose and the tube was not loose.

Mr. LYON.—Take the witness. [529]

Redirect Examination.

(By Mr. BLAKESLEE.)

Q. What was the result of putting these jam-nuts on the stuffing-box at the lower end of the shaft of the Pabst installation?

A. The object was to keep the packing in more securely than it was with the possibility of a loose gland.

Q. Why was that a desirable object?

(Deposition of H. C. Robb.)

A. To keep the water from leaving the pump and directing it into its proper channel.

Q. What kind of a fit did it make or secure as between the packing and the shaft on that stuffing box?

A. It made a neat running fit and the gland helped support the shaft.

Q. What kind of a fit with reference to tightness?

A. It kept the water from entering the tube?

Q. Which tube?

A. The tube containing the shaft.

Q. How was it that the first Pabst pump was tested out at San Francisco before it was shipped to Milwaukee?

A. It was laid on its side horizontally. The water was tested by checking it under a pressure gauge. The thrust of the pump was determined carefully by a spring-measuring apparatus—a spring scale.

Q. How was the pump rotated in making the test?

A. It was either a steam engine or an electric motor, I don't remember which.

Q. How was that source of power connected up with the runners? A. With a belt.

Q. What was the belt applied to?

A. An auxiliary shaft was supported independent of the pump. [530]

Q. What did that shaft connect with?

A. The pump shaft.

Q. What was this pump shaft used in that test?

A. A short piece projecting outside of the shafting as shown by the blue-prints.

Q. Projecting outside of what?

A. The casing of the pump shell.

(Deposition of H. C. Robb.)

Q. Do you remember anything further about that test?

A. The power was so determined and the amount of water, and the elevation and the thrust.

Q. Who was present at that test?

A. Mr. Frank Jackson and myself and one or two helpers.

Q. Did you install any other kind of pump, of any kind in the same locality or in the same part of the country as the place at which you installed the Lagrange pump?

A. Yes, sir; there was one for the same company at Blue Island.

Q. How far was that from Lagrange?

A. About fifteen miles in a direct line.

Q. When did you install that?      A. In 1905.

Q. What kind of a pump was that? Describe it briefly.

A. A bored well pump of the type of the Schlitz, and connected direct with the motor.

Q. Type of what?

A. Of the Pabst, and directly connected to the motor.

Q. Who supplied that pump outfit?

A. The Byron Jackson Machine Works.

Q. Under whose instructions did you install that outfit?      A. The Byron Jackson Machine Works.  
[531]

Q. Now, in this other pump that you have just told us about, that you installed in 1905 near the Lagrange installation, what, if anything, was used for lubrication in that pump?      A. Oil.

(Deposition of H. C. Robb.)

Q. How was that supplied?

A. The oil for the pump bearings was forced downward by water pressure.

Q. How was that pressure applied?

A. It was applied to the oil cups the same as a cup on a steam engine. A steam engine lubricating oil cup.

Q. Was there any other installation provided for in that pump—any other lubrication installation?

A. The lubrication of the tubing.

Q. How was that provided?

A. The same as the Pabst.

Q. Referring again to this stuffing-box at the lower end of the shaft in the Pabst installation, how did that compare with other stuffing-boxes used in pumps at that time, with respect to tightness and fit, respectively?

A. It was the same. It was the same running fit that is used in ordinary pumps.

Q. How did it compare with the tightness and fit of the stuffing-boxes in pumps used to-day?

A. The same.

Mr. BLAKESLEE.—That is all.

Mr. LYON.—That is all.

The MASTER.—The witness is excused. [532]

In the Southern Division of the United States District Court, for the Northern District of California, Second Division.

IN EQUITY—No. 485.

FOR INFRINGEMENT OF LETTERS  
PATENT #821,653.

LAYNE & BOWLER CORPORATION (a Corporation),

Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation), ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STANLEY M. HALSTEAD, P. E. VAUGHAN and ALLEN W. ROSS,

Defendants.

**Certificate of Official Reporter to Transcript of  
Record Made Pursuant to Stipulation.**

I, I. Benjamin, official reporter, having, pursuant to order of Court, taken down the testimony of the witnesses Franklyn H. Jackson and H. C. Robb in the above-entitled cause, at Los Angeles, California, on the 5th day of January, 1920, et seq., do hereby certify the above and foregoing to be a full, true and correct transcript of the record of the testimony of the said Franklyn H. Jackson and H. C. Robb in the said case of Layne & Bowler Corporation, Complainants, vs. American Well & Prospecting Co. et al., Defendants, In Equity—No. E-42.

Dated: Los Angeles California, July 31, 1920.

I. BENJAMIN,

Official Reporter. [533]

(Here follows blue-print attached to deposition of Frank H. Jackson and R. C. Robb.)

Received copy of within record this 11th day of August, 1920.

FREDERICK S. LYON,

Atty. for Plaintiff.

[Endorsed]: Filed Sept. 7, 1920. Walter B. Maling, Clerk. [534]

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In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation), ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STANLEY H. HALSTEAD, P. E. VAUGHAN, and ALLEN W. ROSS,

Defendants.



**Proceedings Had September 2, 1920.**

Thursday, September 2, 1920.

Counsel Appearing:

For the Plaintiff: FREDERICK S. LYON, Esq.,  
and WILLIAM K. WHITE, Esq.

For the Defendants: CHARLES E. TOWNSEND,  
Esq., and W. A. LOFTUS, Esq.

(It is stipulated that a transcript shall be written up in triplicate, and each party pay one-half the same, to be taxed as costs in favor of the prevailing party.) [535]

OPENING STATEMENTS OF COUNSEL  
OMITTED. [536]

Mr. LYON.—I understand, Mr. Townsend, that it is stipulated that the title to the patent in suit is in the plaintiff, as alleged in the bill of complaint.

Mr. TOWNSEND.—We have no reason to question the pleadings in that respect.

Mr. LYON.—I think we can expedite the trial of this case very much if we adjourn now till morning, and give me an opportunity to get the necessary exhibits up here, and then I will produce a witness in the morning and proceed.

(An adjournment was here taken until tomorrow, Friday, September 3, 1920, at ten o'clock A. M.) [537]

In the Southern Division of the United States District Court, for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC., et al.,

Defendants.

Friday, September 2, 1920.

**Reporter's Transcript.**

In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation), ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STANLEY H. HALSTEAD, P. E. VAUGHAN, and ALLEN W. ROSS,

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Friday, September 2, 1920.

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For the Plaintiff: FREDERICK S. LYON, Esq.,  
and WILLIAM K. WHITE, Esq.

For Defendants: CHARLES E. TOWNSEND,  
Esq., and W. A. LOFTUS, Esq.

**Testimony of M. E. Layne, for Plaintiff.**

M. E. LAYNE, called for the plaintiff, sworn.

Mr. LYON.—Q. Where do you reside, Mr. Layne?

A. South Pasadena, California.

Q. Prior to moving to California, had you at any time lived in Houston, Texas? A. Yes.

Q. You are the M. E. Layne to whom letters patent No. 821,653, the patent in suit, were issued?

A. Yes.

Mr. LYON.—We offer the patent in suit in evidence, and ask that it be marked "Plaintiff's Exhibit 1," [539] (The patent was marked "Plaintiff's Exhibit 1.")

Q. Prior to moving to Texas, Mr. Layne, in what business and where had you been engaged in such business?

A. In the well business, and I commenced to work in the spring of 1883 in South Dakota, and moved from there into Iowa, later, and continued the well work in Iowa, throughout Minnesota, and Nebraska and Dakota until the year of 1902; I did some work in 1902 and 1903 in those states, but also did work in 1902 and 1903 in Texas, moving to Texas, as I now recall it, with my family temporarily in the winter of 1902-3, and permanently in 1904, as I now recall it. I may be slightly in error in the

(Testimony of M. E. Layne.)

date that I moved there permanently.

Q. You say you were engaged in South Dakota and Iowa in well work. Please explain to the Court a little more fully what you mean by well work in that connection?

A. In Dakota my principal work was for ranchers, although I did some city and municipal work; also, some work for public utilities; the greater part of my work being what we call for farmers or ranchers in the tubular well line—some work of a large size, but mostly 2 and 3-inch wells, especially the wells that were of any particular depth, or any very great depth; I did a good amount of 24 and 34-inch work, which was in the ordinary bored well type, not drilled.

Q. After you moved to the State of Texas, in what business did you engage?

A. Well, I moved from there into Iowa and in Iowa I was in the public utility well construction and city well construction, also railroad work, almost exclusively. Those wells were large ranging from 6 inches to 16-inch drilled wells.

Q. Now, then, Mr. Layne, explain to the Court what you mean [540] by the work in that connection; what did you do in that connection, and how did you drill those wells, in a general way?

A. The wells drilled in Dakota were drilled by what we call the jet system, or drop system, using water for elevating the dirt, and the wells that we bored in Dakota we used the machine that simply bored or that cut dirt loose and the dirt was removed from the well on the tool that cut it; the

(Testimony of M. E. Layne.)

boring rods and cutting tool were removed from the well each time we had the auger or cutting member filled with clay or other substance being penetrated.

The next system that I spoke of, the wells drilled in Iowa, and Minnesota, and South Dakota, and throughout that part of the country for public utility and railroad work, at that time we were using mostly what we call solid tools; by this method we put the drill in, we cut the dirt loose with a drop tool, and after a sufficient amount of drilling done so as to get the water well laden with the cutting for boring the well, we would withdraw the drill stem and lower what we call the slush bucket into the well, remove the boring, and then after the bore of the well had been cleaned we would insert the drill again and cut more of the formation loose, and remove the same with a slush bucket, as before stated. In the sand and more loamy districts we used what is called the rotary system, that is commonly used in all loamy or sandy shale formations and sand formations.

Q. In those wells that you so drilled in South Dakota and Iowa before you moved to Texas, what kind of pumping mechanism did you install, if any?

A. Usually, we installed what was called a reciprocating type of pump, with steam head or power driven, but in most cases steam heads for the public utility work and city work. [541]

Q. When you moved to Texas, did you have anything to do there with the drilling of water wells?

A. Yes.

(Testimony of M. E. Layne.)

Q. Briefly explain to the Court what you first did in that line, and what the general construction and mode of operation of the pump mechanism was in such wells?

A. In Texas, where I was working, the rice industry demanded a large amount of water, for which purpose and supply they were using drilled wells, and they used the rotary system, mostly, in the drilling of those wells, and the pump mechanism used for procuring the water from the well was what is commonly known as the open-pit or vertical centrifugal pumping type pump. The pump was installed in an open pit, similar to that of a shaft in a mine. They had to dig the pit large enough so as to admit of men going up and down the pit to prepare for the pump, also for the installation of the pump, the adjustment and the lubrication of the same. One of the difficulties encountered in this class of pump construction was the fact that in many instances we encountered sand and water at a shallower depth than the permanent well could be secured at. For instance, at 28 to 35 feet we would in many cases encounter a quicksand or fine sand formation carrying considerable water, but not sufficient water to supply the demand of the well or demand of the party using the water; consequently, the bore of the well was carried to a greater depth, at which we usually secured thicker stratas of sand, and of a coarser nature. In many cases mixed with gravel, and in some cases as much as 50 to 100 feet of this water-bearing formation was encountered in one strata. Before, the well in that case was  $95\frac{5}{8}$

(Testimony of M. E. Layne.)

or 10-inch, and in some cases 11 $\frac{5}{8}$  and 12-inch. At the point at which the [542] water was secured, we put in screens opposite the waterbearing formation, so that the water might enter the bore of the well from the different strata encountered. Many times we encountered two or three strata, and in those cases we set the casing so that the casing that did not contain screens came opposite the nonbearing portion of the well, and the screen portion of the casing was placed opposite the water-bearing portions of the well. In order that these pumps might be placed low enough so that they would be within reach of the water produced by the deepest strata, it was necessary to sink an open pit to a greater depth, in many cases, than the clay formation overlying the first strata, and, therefore, it became a very difficult matter to install the pit to a depth great enough to permit the placing of the pump at low enough a point so that the pump would be well within the reach of the water from the deeper strata. This was actually experienced by me in attempting to place a pump in a well on the Milner—

The COURT.—I think he has gone far enough.

Mr. LYON.—Q. Now, Mr. Layne, I show you a print and ask you if that, in a general way, represents the installation of a pump in one of those pits—one of those pump installations to which you have referred? A. Yes.

Q. You have seen this print before? A. Yes.

Q. Made under your instructions? A. Yes.

Mr. LYON.—We will ask that this be received in

(Testimony of M. E. Layne.)

evidence and marked "Plaintiff's Exhibit 2."

Mr. TOWNSEND.—We object to the legend on here, because it is misleading. This says, "Previous to M. E. Layne's invention."

Mr. LYON.—Everything but the legend. [543]

Mr. TOWNSEND.—I think it should be covered up. I have no objection to the print, if this legend be excluded.

Mr. LYON.—All right; any way you want on the legend.

Q. Now, you have referred to the pit pump installation, Mr. Layne. Was that in common use prior to the introduction of the well mechanism of the patent in suit?

Mr. TOWNSEND.—That is objected to as assuming a fact not proved by the record. If you want to ask if the pit pump was the general mechanism in use before, there is no objection.

The COURT.—Q. Prior to the date of the patent?

A. Yes, it was.

Mr. LYON.—Q. Was there also a well-pumping mechanism known as the auger type?

A. Yes. The auger type of pump was a pump that would go inside of the bore of the well, and did not need a pit, but the difficulty with the auger-type pump was if the well produced sand and the sand came in contact with the bearings it rapidly cut out the entire apparatus, and rendered it inoperative.

Q. Subsequent to the application for the patent



(Testimony of M. E. Layne.)

in suit, did you continue in the well-drilling business? A. Yes.

Q. What type of apparatus did you thereafter use, that is, after the date of application for the patent?

A. As soon as I could get my pump constructed, we used my own pump exclusively.

Q. You say that we used our own pump exclusively. Can you describe that briefly?

A. I think so. The pump was built, as we consider, along the lines covered by the patent, in which it may be possible to put a pump of large capacity inside of the bore of the well, obviating the necessity of digging a deep pit; it also made it possible to lubricate and give the pump the proper attention from the earth's surface. The power [544] transmission apparatus or well apparatus, as covered by the patent—

Mr. TOWNSEND.—I object to his legal construction of what the patent covers.

A. —was provided with or provided means whereby the shaft through which the power was transmitted and the bearings holding the shaft in alignment were protected by an outer casing which protected the shafting and the bearings from the sand that the water carried, which sand made it practically impossible to operate the pump any considerable length of time unless said bearings and shaft were protected; the shaft-enclosing casing through which the power was transmitted, performed the function of alignment, lubrication and

(Testimony of M. E. Layne.)

protection of both the shaft and bearings; it also provided means—

Mr. TOWNSEND.—Pardon me. This is going beyond the question. I think he has answered the question, which was as to the structure that he used.

The COURT.—Perhaps that is true.

Mr. LYON.—Maybe it is.

Q. Mr. Layne, in providing such a structure, what were the objects which you had in view, and which were accomplished by such power-transmitting structure, and what, if any, were the difficulties or things which you attempted to avoid thereby?

The COURT.—Hasn't he answered that?

Mr. LYON.—Not entirely; that brings in the very part that counsel is objecting to as not responsive to the question. I am only shortening this by allowing the witness to go ahead in his own manner and explain the whole thing, rather than one thing at a time.

The COURT.—Perhaps you had better go ahead and state what you have not already recited. If there is anything else [545] to be added to what you have said as to the objects of your invention, and the difficulty that you intended to overcome by its building, state it.

A. One of the main difficulties that we overcame and entirely eliminated from the work was the necessity of the big pit and cumbersome old type of centrifugal pump, which, in many cases, it was quite impossible to sink the pit to a great enough depth so that during the period that the pump was in operation the water plane would come within

(Testimony of M. E. Layne.)

the reach of the pump. With my system of installation covered by the patent, it may be possible to lower the pump in the bore of the well as the water plane receded, without in any manner changing the structure of the well proper, or the pit. It also provided means so that in many instances water could be lifted from greater depths by my system, under the patent, than it had ever been done before. We are now operating from two to four hundred foot lifts for irrigation work.

Mr. TOWNSEND.—If your Honor please, I think he is getting now beyond the question by referring to the patent.

The COURT.—Confine your answer, Mr. Layne, to what were the several features of advantage that you sought in your mechanism, and what the difficulties were that you obviated.

Mr. TOWNSEND.—It does not seem to me that we are concerned with the purpose. The patent speaks for itself.

The COURT.—I think I will let him state what the purpose was.

Mr. LYON.—Give the whole of your purpose in this invention, and what the difficulties were, and all of that which you sought to obviate. You have already told us about the pit pump, and [546] the ability to get a deeper well into operation. Now, what in regard to the mechanism, itself, directly?

The COURT.—He has already stated that he attempted to provide means by which he could lubricate and protect the machinery and bearings from the sand and water.

(Testimony of M. E. Layne.)

Mr. LYON.—Let me ask you this direct question: What was the reason for bearings along the pump shaft from the top of the well to the top of the pump? Why were they required?

Mr. TOWNSEND.—I think that is immaterial, what his reasons were. The patent, itself, is self-explanatory.

The COURT.—I think that must be very obvious. These bearings were old even in the old style of pump with a long shaft; it was necessary to have them. However, he may answer the question.

Mr. LYON.—Make it short.

A. The reason for bearings in a long line of shaft is to limit the whip or side strain that might be thrown upon it, but the particular purpose in this case was to so arrange these bearings in the shaft-closing and protecting casing in such a manner that the pump apparatus could be lowered in the well and the pump allowed to pump water bearing sands to a certain depth, or, rather, in large quantities, without affecting the bearings, or coming in contact therewith; the bearings being protected by the outer shaft protecting casing, which made it possible to space the bearings their proper distance apart, to hold the bearings in their proper relation to the shaft.

The COURT.—The question is, why did you have so many bearings. Is there any other reason than you have given? A. No.

Mr. LYON.—Now, in order to provide the necessary bearings, you have already said you supported the same as a part [547] of the enclosing casing?

(Testimony of M. E. Layne.)

A. Yes.

Q. What else, by so unifying your structure, were you enabled to accomplish by such enclosing casing?

A. We were able to place the pump at any desired point in the well, suspend the pump from the surface, operate the pump from the surface, lubricate the pump from the surface; in other words, we were not in any way required to go into the well for adjustment. It made the adjustment, the operation and care of the pump all possible from the surface.

Q. I notice in the patent that the enclosing casing is made up of sections, as well as the pump shaft in sections. What has the sectional feature of the enclosing casing to do with the question of the intermediate series of bearings?

A. At each end or each section of the pipe, there is a bearing plate. This sectional feature has a double function, one being that it makes the bearings and wearing parts of the pump accessible; another being it makes the shafting and shaft casing, discharge pipe casing possible to be assembled so that each section becomes a unit within itself, so that as the different units are added to the column the discharge pipe, shaft casing and shafting, the entire equipment is lowered an equal distance in the well, so that all of the apparatus necessary for placing the pump at any desired depth or at any depth in the well can be prearranged or prepared and equipped in the shop previous to going into the field.

Q. Then, if I understand you correctly, it was the fact that this pump shafting, the enclosing casing

(Testimony of M. E. Layne.)

and the well casing were all in sections that enabled you to lower the pump in the well as required. Is that correct?

A. The discharge casing, not the well casing, yes. The pump could also be [548] lowered in the well where the discharge casing was omitted, and placed at any desired point in the well.

Q. To what extent, if at all, Mr. Layne, have you or any of the corporations with which you have been connected manufactured and sold the pump mechanism embodying the features of your invention, as you have just explained the same to us?

Mr. TOWNSEND.—That is objected to as leading and assuming a fact not established by the record, that there was any invention here. I think he has particularized more as to the structure manufactured, without reference to any patent.

The COURT.—Overruled.

A. Well, it runs into several millions of dollars. The exact amount I am not able to say; possibly twenty million.

Mr. LYON.—Q. And in what portions of the United States have such installations been made?

A. Over the entire United States and Canada; some in foreign countries—Russia, Japan and Canada.

Q. After you commenced first placing this mechanism on the market in Texas, as described by you, what thereafter was generally installed in Texas and Louisiana in irrigation wells?

A. In all lifts that were intended, like deep lifts, our installation was almost exclusively used; in the

(Testimony of M. E. Layne.)

shallower lifts, where a horizontal pump could be used until the water plane receded from the suction, the horizontals were used.

Q. Have you ever at any time removed the pit pump installations from any of the pit pump wells and substituted your mechanism?

A. In many hundreds of instances.

Q. In what portions of the country?

A. All over the United States, in all irrigation districts.

Q. Does that include the irrigation districts of California, [549] as well? A. Yes.

Q. What effect, if any, has, to your knowledge, been produced by the use of this pumping mechanism, limiting such answer for the present to the rice fields of Texas and Louisiana?

Mr. TOWNSEND.—I think that is calling for an expression of opinion as to which the witness has not shown the proper qualification.

The COURT.—Sustained.

Mr. LYON.—You are familiar with the conditions in the rice fields of Louisiana and Texas?

A. Yes.

Q. And have been since 1902? A. Yes.

Q. And you are familiar with the drilling and operation of the irrigating wells of those sections?

A. Yes.

Q. State what apparatus has generally been used in those districts which I have mentioned, since the time I have mentioned?

A. Our apparatus, covered by the patent.

Mr. TOWNSEND.—I move that that be stricken

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(Testimony of M. E. Layne.)

out as not responsive to the question.

The COURT.—I think I will let it stand. Overruled.

Mr. LYON.—What effect, to your knowledge, has the general adoption and use of the well mechanism of your patent in suit had upon the rice industry of Texas and Louisiana?

Mr. TOWNSEND.—Your Honor, that is calling for a legal conclusion. I have no objection to his stating how many pumps he has put in.

The COURT.—Do you object to it?

Mr. TOWNSEND.—I do, as calling for a legal conclusion.

The COURT.—I am not sure how legal it will be. I do not think the witness is competent to answer that question. Proceed.

Mr. LYON.—Are you acquainted with the defendant, Halstead? A. Yes. [550]

Q. How long have you known him?

A. Eight or ten years; the exact date I first met him I do not recall.

Q. Was he at any time ever connected with the Layne & Bowler corporation, the plaintiff in this case? A. Yes.

Q. In what capacity? A. In various capacities.

Q. First in what capacity?

A. As I remember it, he was first salesman.

Q. And thereafter he became a stockholder and one of the officers of the corporation, did he?

A. Yes.

Q. And as such, fully acquainted with and had full opportunity to know the well mechanism manu-



(Testimony of M. E. Layne.)

factured by the plaintiff company? A. Yes.

Q. And was engaged in the sale thereof in the State of California? A. Yes.

Q. Thereafter, in the year 1914, did he change his relation to the company?

A. About that time he changed his relation in that he represented us through a commission form of salary, rather than a fixed salary; but, otherwise, he was our representative.

Q. After that date, his relations with your company, as such representative in any manner were terminated, were they? A. After what date?

Q. After 1915 or 1916.

A. The exact date I do not recall, but he ceased to represent us on a commission form of basis, and continued to manufacture or went to manufacture, or did manufacture of pumps of his own.

Q. Were you able, Mr. Layne, at first to ascertain exactly what form of pump mechanism Mr. Halstead was manufacturing?

A. We attempted to get this information, and made a number of attempts, but failed in our different attempts to get this information. [551]

Q. You learned of Mr. Halstead's, and of defendant Vaughan's connection with the defendant, Western Well Works, Inc., did you? A. Yes.

Q. Did you attempt to ascertain exactly what construction of well mechanism said defendants were making?

A. I requested a working drawing of them to show just what they were making.

The COURT.—Requested from whom?

(Testimony of M. E. Layne.)

A. I requested Mr. Vaughan and Mr. Halstead to furnish me working drawings to show just what they were making, in order that I might satisfy myself with relation to whether or not, in my opinion, they were infringing our product, and Mr. Halstead and Mr. Vaughan assured me in one conference that if I would visit San Jose that they would show me through the shops. I made such a visit and requested the privilege of making an investigation of their product, and they denied me this privilege. In order to ascertain just what was being done, we went into the field and bought one of the Western Well Works pumps and removed it from the well for inspection.

Mr. LYON.—Q. Now, prior to this visit to San Jose to defendant's Western Well Works, Inc., shop, when you were refused admission, you had notified the defendants that you claimed that they were infringing the patent in suit?

A. As I now remember, yes.

Q. And Attorney Charles E. Townsend, representing the Western Well Works, had correspondence with your attorney, Paul Synnestvedt, in Philadelphia? A. Yes.

Q. Why was it, Mr. Layne, that prior to last fall you did not actually commence suit for an injunction against the defendants herein?

A. We were unable to determine their structure.

Q. Was there any reason in particular why you found it would [552] be absolutely necessary to procure one of their structures before bringing such suit?

(Testimony of M. E. Layne.)

A. We were without information as to what their structure consisted of, and without such information we were not in a sufficient position to bring suit, without that knowledge; in other words, we wanted to know definitely what they were doing, and if, in our opinion, they were not infringing us, we would be foolish to bring suit.

Q. You were furnished with a copy of a letter from the defendant, Halstead, to your attorney, Paul Synnestvedt, and one from Mr. Charles E. Townsend, as attorney for the defendant, to Paul Synnestvedt, in which they advised you to find out exactly what they were doing before you brought suit, were you not? A. Yes.

Mr. TOWNSEND.—I object to these letters being stated by the witness. I think the letters, themselves, are the best evidence.

Mr. LYON.—The letters are in evidence in San Jose, and there is no question about that one fact. That is all I want.

Mr. TOWNSEND.—I would like to have the letters presented in court.

Mr. LYON.—All I want it for is that one statement.

Mr. TOWNSEND.—I want the letters.

Mr. LYON.—We will reserve the right to produce that. It is already of record in San Jose.

Q. Mr. Layne, what has been your physical condition during the last four years?

A. I have been very ill. I was taken ill four years ago last February, and with a slight recovery I was able to go about my work under considerable

(Testimony of M. E. Layne.)

effort, but have not been in my normal condition since that time. I have [553] been somewhat better the last year, but am still very weak.

Q. Has that had anything to do with the question of your following up this question of infringement by the defendants?

A. Yes. I have been physically unable to give the work the attention that it should have.

Mr. LYON.—Plaintiff has offered in evidence a copy of the contract dated October 1, 1914, between the Layne & Bowler Corporation and Stanley M. Halstead and P. E. Vaughan, being the contract referred to in the bill of complaint and admitted in the answer, and it is stipulated that if there is any error to be found in this copy it will be corrected by comparison with the original, one of which defendants' counsel has in his possession. Is that correct?

Mr. TOWNSEND.—There is no objection to the contract as far as being a true copy is concerned, but I do object to its admission in evidence as immaterial, irrelevant and incompetent. This suit is not based on a contract. It is a plain patent suit. It is well recognized that no estoppel can arise from any recital in this contract or any contract unless it is the essence of the contract, nor is the recital binding in that action unless it is founded on a contract. This action is not founded on a contract, and the contract has no place in the record. If counsel wants to point out further the object for which he wishes to have it introduced and considered by the Court, I want an opportunity to argue

(Testimony of M. E. Layne.)

as to that, because he is obviously offering it for the purpose of estoppel; before I assume that, I would like to have counsel state it so that I may lay before your Honor now the authorities on that question, to show why it should not be considered or admitted.

The COURT.—I assume that counsel's position was outlined [554] in his opening statement.

Mr. LYON.—The contract is admissible not only on the grounds stated in my opening statement of estoppel, etc., but it is competent, itself, to show that prior to entering on the infringing acts these parties were our agents and did represent us. The contract is competent for both purposes. Of course, Mr. Layne has testified orally to their connection, but the contract, itself, shows it.

The COURT.—I do not believe there is any objection to its being received for that purpose.

Mr. TOWNSEND.—There is an objection to its being received for any purpose in this case.

The COURT.—As showing agency?

Mr. TOWNSEND.—There is no denial that there was a sales agency.

The COURT.—If there is no denial of it it will not be received for that purpose, then. It will be unnecessary to receive it for that purpose.

Mr. LYON.—Then it is offered for the purpose stated in the opening statement.

Mr. TOWNSEND.—Then it is not admissible, nor in any way binding at this time on the question of estoppel or on the question of any allegation regarding validity of the patent. The authorities, I

(Testimony of M. E. Layne.)

believe, are quite clear on that point.

The COURT.—Let me see the contract. I have not seen the contract. That I may understand you, what is your point, that the contract cannot be interpreted as an estoppel, or that, as a matter of law, it cannot be received, even though in form it would constitute an estoppel?

Mr. TOWNSEND.—As a matter of law, it does not constitute [555] an estoppel.

The COURT.—Why does it not, as a matter of law?

Mr. TOWNSEND.—It is against public policy.

The COURT.—Regardless of the fact that the contract expressly obligates the parties to recognize the amount of the contract, still you claim that it would not, as a matter of law, constitute estoppel, because it is a matter against public policy?

Mr. TOWNSEND.—Against public policy. Now, that the contract has manifestly expired, the contract having been for four years, from October, 1914, and that time having elapsed, and the contract having actually been discontinued, as to operations by the parties later, a matter which we do not need to go into, but it never ran four years. But now the contract has expired. The estoppel, if any ever existed, ceased; furthermore, there are conditions in there which would have made that contract unenforceable against defendants by people seeking to benefit by it. Now, it lacked mutuality. The clause I read yesterday about their being forbidden to handle any other device, was in contravention of the Clayton act, and the acts against restric-

(Testimony of M. E. Layne.)

tion of competition. I could probably read an excerpt to you from the Supreme Court of the United States—

The COURT.—If that is your position, I shall receive the instrument without prejudice to your right to argue that question later.

Mr. TOWNSEND.—And to introduce evidence on our complete defenses?

The COURT.—Yes.

Mr. LYON.—If your Honor please, we wish to reserve an objection [556] and exception to the receiving in evidence of the prior art; if counsel attempts in defense to put in the prior art and anticipate the patent, or the other defenses of want of invention, etc., we wish to have it understood that we shall object.

The COURT.—You will be given a full opportunity. You need not cross that bridge before you get to it.

(The document was marked "Plaintiff's Exhibit 3.")

Mr. LYON.—We have produced here, your Honor, the pump that Mr. Layne says he bought of the Western Well Works' installation, and I will ask counsel for defendant, he having examined the same, if he is prepared now to stipulate that it was manufactured and installed by the defendant on the Anderson ranch, near Stockton, California. We will prove the condition of it, and the circumstances under which we removed it, and all that. I want to see if they can make a partial stipulation, at least, to save time. This was removed prior to the com-

(Testimony of M. E. Layne.)

mencement of the suit, and after we got it, it was the installation upon which the suit was based.

Mr. TOWNSEND.—My client advises me that in his belief it is a pump, not in its original form, though, but such as they put in on the Anderson ranch in 1916. They put several down there, and it appears to conform to the construction, except that the pump has been materially changed.

The COURT.—Materially changed by whom?

Mr. TOWNSEND.—Plaintiff might answer that.

Mr. LYON.—We will prove that, except as you see sections that have been cut out, so that we could see the interior, is is now in the same condition as when removed from the well. I will offer that proof.

The COURT.—Is there any part there that was not there when [557] you sold it?

Mr. TOWNSEND.—There is a great deal that has been cut away. Of course, that is absent from what the condition of the pump was when it was put in. Our people put in a complete pump.

The COURT.—Oh, yes, but is there any part that was not in the pump when you installed?

Mr. TOWNSEND.—As far as a casual inspection in the short time allows, there does not seem to be anything changed, but we cannot tell how its operation will be now, or how this was operated when the plaintiff took it out.

The COURT.—No, but there is nothing here which was not in the pump when you installed it?

Mr. TOWNSEND.—Nothing as far as appears.

Mr. LYON.—Subject to that stipulation, and with the understanding that we will treat fairly the his-



(Testimony of M. E. Layne.)

tory of that pump, we offer it in evidence as Plaintiff's Exhibit 4.

(The pump was marked "Plaintiff's Exhibit 4.")

Q. Now, Mr. Layne, calling your attention to Plaintiff's Exhibit 4, the Anderson pump, when did you first see it, yourself?

The COURT.—I do not see where that is material.

Mr. LYON.—Yes. I am going to show certain tests were made for the purpose of ascertaining whether there is lubrication by the method of these leaking joints, or whether there is another method of lubrication. I am coming directly to it.

The COURT.—Very well.

Mr. LYON.—Q. When did you first see it?

A. As I remember last winter.

Q. What changes, if any, have been made in this since it was brought to your place at Los Angeles?

A. No changes whatever, [558] except that it was cut open for easy view of the different parts, so that we could see how each part functioned with relation to the other.

Q. Are you familiar with this installation?

A. Yes.

Q. Have you also examined the head of the pump, which is here? A. Yes.

Q. Now, will you explain to the Court this Anderson pump construction of the defendant, Plaintiff's Exhibit 4, and compare the same with the patent in suit, particularly with regard to the shaft-enclosing casing, bearings and lubrication?

Mr. TOWNSEND.—Just a minute; that is ob-

(Testimony of M. E. Layne.)

jected to as no proper qualification has been shown by the witness to testify as to the defendant's pump, it is not shown that he ever operated one, or saw one operated, or knows anything about its mode of operation. You have here before you a dismantled section which gives no idea of its mode of operation, and there is no proper foundation laid.

Mr. LYON.—Q. Were you able, as the pump came to your place in Los Angeles, to determine the lubrication features and operation of the pump?

Mr. TOWNSEND.—The same objection.

The COURT.—Overruled.

A. Yes.

Mr. LYON.—Please answer the question, make the comparison that I have asked.

Mr. TOWNSEND.—I think, your Honor, he should explain the condition in which that pump came to him in Los Angeles.

Mr. LYON.—I am going to prove all that by another witness, anyway, the entire pump end of it. I wanted to get down to the meat of this case, if I could, in a hurry. I will put two other [559] witnesses on, Mr. Townsend, regarding that matter.

A. Before this pump was withdrawn from the well, I laid out a plan by which the removal of the pump was made possible without in anywise taking any of the parts down, or in any way unassembling same.

Q. You were not present at that, were you?

A. I was not present, but I laid it out and had photographs of my plan.

Q. Just keep to what you personally know about

(Testimony of M. E. Layne.)

this matter and we will put on other witnesses as to the other matter. Just tell us about the test you made of this pump, or the comparisons that either you, yourself, made, or that you saw made.

A. In the first place, the tube that surrounds the shafting that enters the bearing is continuous from the pump neck to the top of the well, which makes connection with the pump head. A 3-inch pipe connects up through the discharge T into the pump head proper, so that the water, as it is being pumped from the well by the pump discharges up through the casing member here, and outside of the shaft casing. The lubricant, as it is applied, works its way down through the shaft casing, and—

Mr. TOWNSEND.—Now, your Honor, he never has seen one of these pumps in operation, and so he can't tell how it is lubricated.

The COURT.—Well, he agrees with your statement, anyhow.

Mr. TOWNSEND.—I don't know how much of this he is going to weave into the patent; that is what I am worrying about. I admit that he can explain his own patent.

The COURT.—He is stating precisely what you stated in your opening. Proceed with the answer.

A. The lubricant is then admitted into the well through the [560] drain port or vent in the pump neck—

Mr. LYON.—Q. You are now pointing, Mr. Layne, to the pump neck there, where the incline drain tubes are?

(Testimony of M. E. Layne.)

A. Yes, sir, I have my pencil on the incline drain tubes.

Q. That is down in the well?

A. That is down in the well, at the pump head, at the top of the pump bore, that being our pump bore there, or pump neck. The same construction follows all the way through in that that is in this, the only difference in the patent from that is that the discharge pipe, in place of being concentric in the shaft-enclosing and protecting casing, is on one side of the pump, so that the water in the one shown in the preferred form in my patent comes up through a discharge pipe that does not surround the shaft-enclosing and protecting casing, but does come up on the outside of it.

In my second form, it shows the discharge pipe can be eliminated, and the casing of the well perform the function, and in that case the whole casing would be concentric with the shaft-enclosing casing. In other words, I did not want to restrict myself as to the concentric form of discharge or side form of discharge, or any other manner of discharge of the water. The point I was after and attempting to cover, and I believe we have successfully accomplished the same, is the protection of the shaft through which the power is transmitted from the earth's surface through the shaft-enclosing and protecting casing to the pump proper, placed at any desired point in the well. To accomplish this, the means by which we get the bearings in the shaft casing—the shaft casing and bearings in connection with the discharge pipe performing the function of

(Testimony of M. E. Layne.)

the old cumbersome frame necessary in the open dug pits, replaced or made it possible so that the pump could be inserted in the [561] casing of the well and not necessary to allow room for a man to go up and down in the well so that the bearings could be properly lubricated and adjusted, and the pump also. And the bearing feature, and the shaft feature, and the lubricating feature, and all of that were made possible with my invention, and the installation made possible from the earth's surface, as well as the power transmission. Therefore, we claim that every part of the Halstead structure, or the Western Well Works structure, every pipe, the enclosing casing, performs the same function as our enclosing casing, the bearings perform the same function, the lubricating performs the same function; the shaft-protecting casing shuts out the sand as it is being pumped through here, so that the lubricant can gravitate or work its way down through the shaft casing, and as it works down it both lubricates and protects in every way every bearing throughout the entire line of shafting. One drop of oil admitted at the surface, or a dozen drops of oil, lubricate each bearing as it passes from one to the other, and consequently there is no room for any dirt to enter; there is no room for sand to enter. The alignment is made perfect; the power transmission feature through the lubricating tube is made possible. All of these features are clearly shown in the patent. It shows a section of shaft casing, a section of shaft and a section of discharge pipe, all tied together so that it can be as-

(Testimony of M. E. Layne.)

sembled and unassembled at the different points at which they connect; each section becomes a unit in itself, so that the pump can be carried at any place in the well that is to be desired.

Q. Mr. Layne, you were not here yesterday and you did not hear the opening statement of counsel for the defendants. He stated, [562] and if I am incorrect in this I request counsel for defendants to correct me, that each joint of the shaft-enclosing casing in the defendant's structure was loose upon the part to which it attached, so that water could leak in and fill the shaft-enclosing casing, such leakage occurring at both ends of each section of such shaft-enclosing casing; bearing that statement in mind, what did you find in this Anderson pump, Plaintiff's Exhibit 4, in that regard, when you examined the same?

Mr. TOWNSEND.—We object to the question as immaterial, and no foundation laid. There is no showing as to what may have been done with that pump since it left the defendant's hands.

Mr. LYON.—I will prove that.

The COURT.—The objection is overruled; you may answer.

A. On receiving the pump in Los Angeles, I went over the same carefully and made several tests. First, we assembled the pump, just in sections as it would be assembled—

Q. Were those joints opened, or not?

A. No, sir, they were closed.

Mr. LYON.—Q. What is the white that we see at this back joint of shaft-enclosing casing, right

(Testimony of M. E. Layne.)

here, referring to Plaintiff's Exhibit 4?

A. White lead; that is white lead that was on there when we removed the pump from the well.

Mr. TOWNSEND.—We move that that be stricken out. He didn't see the pump when it was removed from the well; he first saw it in Los Angeles.

Mr. LYON.—Q. You mean by your answer when you saw it there first, do you? A. Yes.

Q. Examining this pump, did you measure or examine the connections under which the ends of the shaft-enclosing casing fitted, in Plaintiff's Exhibit 4? A. Yes. [563]

Q. What did you find in that regard?

A. We found that the tube of the bearing was straight down to within a short distance of the main casting, and from there it was slightly tapered, so that when a 3-inch pipe was pushed down to or nearly its proper position the 3-inch pipe would gradually tighten as it took its seat, so that it performed a perfectly pressed closure at that point. Such closure was demonstrated and proven by me in my test there. We assembled the section of this casing and put on pressure and proved that although the pump being submerged at considerably over 100 feet of submersion, no leakage whatever occurred through the port or through the shaft closing casing.

The COURT.—Q. Why would not leakage occur through the port?

A. This, you see, is shut off from this portion; this is a portion of the pipe with the cut-away por-

(Testimony of M. E. Layne.)

tion remaining intact. That is, we just cut out a piece of the pipe right from there to there, so that it might be visible.

Q. But if oil can come out through—

A. We were not testing it for oil then, we were testing it for the inflow of water from this port into the tube; in other words, here is a column of water passing up here from the pump, and their contention is that as that column of water passes up here it freely flows into the shaft-enclosing casing, and each end of each section of pipe—

Q. I understand that, but why wouldn't water come in through that vent if oil would go out from it?

A. It is put in in a different section of pipe; this is the discharge section, and this is the lubricating section.

Mr. LYON.—Q. Those drains are carried out outside the discharge pipe?

A. Yes, outside the discharge pipe. Those drains [564] intercept the lubricating feature of the pump only, but by passing through the discharge column; the discharge column of water comes up through here, straddling this, and goes up through this portion and around here.

Q. I understand that, but if the pump is set down in water, if it is submerged in water, that oil is discharged into the outer pump of the well, as I understand it.

A. Yes. Here is a section of the pipe over here, and when—

Q. Can't you answer the question: Doesn't this



(Testimony of M. E. Layne.)

part of the pump set down in the water?

A. Yes, when it is not in operation; when it is in operation, there is usually no water here, so that the drainage runs right out. On the test, we were outside, we were not in the water at all.

Mr. LYON.—Q. And if any water got into this inner tube, or the shaft-enclosing casing, where would that water come out?

A. It would come out through the port.

Q. Just describe that test; describe what you did, and whether it showed that these joints of casing were tight.

A. That is just what I want this section for; I want to refer to that.

The COURT.—No, we cannot take the time for that. Just answer the question.

A. All right. Here is the section showing your inner tube right down through here. It is tapped there. We put a pressure gage on that. We run that to 57 pounds, which is considerably over a 100-foot head, so that the water was in the discharge column, and showed by the pressure gage it did not enter the oil column at all, whereas if the shaft casing had been loose on the hub the simple filling of the shaft casing would have permitted water to have worked out through the hub. These are different views showing tests [565] I had run on that. Here is one view showing the pump. If the water—

Mr. TOWNSEND.—Your Honor, this examination now seems to be taking an immaterial form. There was no shafting on there, and the pump was not in operation. It was a dummy test, at which

(Testimony of M. E. Layne.)

none of the defendants were present, or at which none of the representatives of the defendants were present. There was no pump shaft in there.

A. (Continuing.) The shaft has nothing to do with the pumping of the water. What we were testing for was this: We had the inner tube in there, just as this shows there, and were putting a pressure into the discharge pipe against the inner tube. The pressure was here, and it could enter here if this would permit the entry of water. But that closed off the entry of water and there was no leakage whatever around the shaft-enclosing casing to be noticed at all.

Mr. LYON.—Q. This is the apparatus, is it, a photograph of it? A. Yes, sir.

Mr. LYON.—We offer this in evidence and ask that it be marked "Plaintiff's Exhibit 5."

Mr. TOWNSEND.—If your Honor please, in regard to any additions to this pump since we set it out, this new member here, which I will mark with an "X," is something that was put on.

Mr. LYON.—Yes, exactly, we closed that off.

Mr. TOWNSEND.—We haven't anything like that on our pump.

Mr. LYON.—We offer that place now which counsel has just marked; I ask to have it marked "Plaintiff's Exhibit 6," the portion tested, and the apparatus as tested in accordance with the testimony of this witness as just given. We do this just to show, if anything comes up, that we produced the apparatus. And we offer to repeat that test if counsel for the defendant [566] desires it.

(Testimony of M. E. Layne.)

Q. Now, Mr. Layne, you say this test you made disclosed that the joints of the casing were tight, so that the water could not leak therein.

A. Yes, sir.

Q. What was the condition of the apparatus otherwise, as to its method of lubrication, and how did it compare with that of your invention?

Mr. TOWNSEND.—We reserve the same objection to that, your Honor.

The COURT.—Very well.

A. The shaft, as it was unassembled from the shaft casing, showed good quantities of grease on the shaft, and the shafting also to be bright, in perfect preservation. As far as the oil was admitted, the shaft shows to have been in good shape, but where the oil was delivered to the point at which the sand and dirt came in contact with the shaft, it shows it to have been slightly greater worn.

Mr. LYON.—Q. Did you examine these joints of the shaft-enclosing casing to see whether there was rust inside of them, or any indications of water having ever entered? A. Yes.

Q. What did they disclose in that regard?

A. They disclosed that they were thoroughly lubricated, and entirely bright, just as if they had been in a storeroom. It shows it right here.

Q. I notice on the upper end of the section of dry shaft of the pump, Plaintiff's Exhibit 4, there is some heavy grease still on there; do you know what that is?

A. That grease was just as I saw it on the shaft when it was returned.

(Testimony of M. E. Layne.)

Q. In quantity, the same, or otherwise?

A. No, there was probably a slightly greater quantity. [567]

Q. This has been in storage in your warehouse in Los Angeles since early last fall, I believe?

A. Well, since last winter, some time.

Q. You have stated that in the Western Well Works pump, Plaintiff's Exhibit 4, the oil would go down through from bearing to bearing, and then out the end of the shaft-enclosing casing, and out the ducts at the bottom. Please explain that feature of this pump, and its relation to your invention, and how it compares, etc., in degree, as well as otherwise.

Mr. TOWNSEND.—The same objection, your Honor.

The COURT.—The objection is overruled.

A. They are identical one with the other, so far as the application of the lubricant to all of the bearings from the pump to the top of the well; they are identical; the only difference being that they provide a duct by which the lubricant, when it reaches the top of the pump, can pass into the well in place of the lubricant as it works through our shaft-enclosing casing passing in the pump portion and is carried out directly with the water being pumped, while there is—

Mr. TOWNSEND.—Just a moment. If your Honor please, he is reading something into that which is contrary to the very patent, itself. The patent is the best evidence.

Mr. LYON.—Well, we deny that statement; he is not doing anything of the kind.

(Testimony of M. E. Layne.)

The COURT.—That is his interpretation of it. You can cross-examine him on that, and you can rebut it.

Mr. LYON.—Q. From your examination of this Anderson pump, Plaintiff's Exhibit 4, was that a free circulation down at the bottom out from the shaft-enclosing casing?

A. It is free after it comes in contact with the ports, but preceding the [568] entry of the oil at the port opening the oil is retarded at each shaft-bearing, just the same as it is with our structure, and performs the same function in the same manner.

Q. Right where your ends are cut into the shaft-enclosing casing, what kind of a bearing was in this pump at that point? A. Which pump?

Q. This Anderson pump.

A. The bearing just as it is shown there. The bearing at the pump neck and out of the ports contact the bright portion of the sub-shaft, and the lubricant worked out through the bearing around the shaft where it is bright into the ports, and then was discharged into the well.

Q. This is the shaft you just put your pencil on?

A. Yes.

Q. And this is the bright portion? A. Yes.

Q. That fitted in here? A. Yes.

Q. Why is it that this is evidently abraded and cut, and also encrusted with scale or rust, if you know?

A. The pressure of the water, as it is being pumped, contacts the lower end of the bearing,

(Testimony of M. E. Layne.)

or the bearing below the port, and passes through the bearing up to the point of the port, and from there it is relieved and runs into the well; consequently, any sand that is being carried with the water being pumped contacts the shaft-bearing below the port portion, and is nonprotected below the port portion, which accounts for the abrasion of the shaft and its worn condition, as shown.

Q. What accounts for the bright portion above that?

A. The lubricant coming in contact with the shafting at that point and passing out through the same port as that which the water passes the other portion of the bearing.

Q. At the time that this was brought to your shop in Los Angeles, did you examine this upper portion of the bearing and this portion [569] of the shaft, to see whether there was any indication of sand or grit, or detritus having cut through the shaft or the bearing at that portion? A. Yes.

Q. What did you find?

A. I found it in its present condition, uncut and thoroughly lubricated.

Q. Then you were able to determine from that examination if this condition of the device, the portion of the bearing which is above the outlet ducts, had been thoroughly lubricated and closed against the entry of sand? A. Yes.

Q. And of water? A. Yes.

Q. And you were able to determine from that inspection of the several joints of the sectional shaft-enclosing casing that they were tight against the

(Testimony of M. E. Layne.)

entry of water? A. Yes.

Q. Now, to conclude your testimony in that regard, and bearing in mind the opening statement of the counsel for the defendant, that the mode of operation was water lubrication, or lubrication by water with four or five drops of emulsifying oil per minute, what have you to say, based upon your inspection and tests of the defendant's pump, in that regard?

Mr. TOWNSEND.—There is no foundation for that question. He has no experience in the mode of operation of the pump.

The COURT.—Well, as to the pump in question here, you may answer the question.

Mr. LYON.—The Anderson pump.

A. The Anderson pump structure showed clearly that the ends of the shaft casing thoroughly contacted on the bearing member in a pressed fit condition, and was or had been treated with white lead, and under actual tests showed that no entry of water could possibly occur. In addition to that, the grease, the bright condition of the shaft, the shaft casing being filled with grease in a large measure, would still further show that the [570] shaft casing had not been subjected to a continuous flow of water during the period of operation.

Q. Referring to the top-end of the shaft-enclosing casing, and to the head of the pump, state from your examination whether or not the shaft-enclosing casing was closed or open at its top?

A. Yes, it was closed at its top.

Mr. LYON.—I will ask counsel for the defendant

(Testimony of M. E. Layne.)

now to examine a paper which I will now hand him, and to state whether he will stipulate that that is the advertisement of the defendant published in the Fresno Morning "Republican" on Sunday, February 29, 1920. I think he is familiar with it. I want to save time by asking counsel to stipulate to that.

Mr. TOWNSEND.—This advertisement is one put out by defendant.

Mr. LYON.—And put out for the purpose of selling the defendant's pumps?

Mr. TOWNSEND.—For all legitimate purposes.

Mr. LYON.—We offer this in evidence as Plaintiff's Exhibit 7. There is a particular section of it I want to call to your Honor's attention. I assume, your Honor, that all of these exhibits which have been offered may be considered as read?

The COURT.—Oh, yes.

Mr. LYON.—I want to call your Honor's particular attention to the heading of "Lubrication"; also the "Pump discharge" column. Well, your Honor might prefer to read this yourself. It has particular reference to the water lubrication and the leakage.

Q. You are acquainted with the defendant Ross?

A. Yes.

Q. At any time was he in the employ of the Layne-Bowler Corporation? A. Yes.

Q. Do you know what his connection is now with the Western Well [571] Works, Inc.?

A. No, sir, I do not.

Mr. LYON.—Will counsel for the defendants



(Testimony of M. E. Layne.)

stipulate that he is one of their sales agents, and was at the time the suit was brought?

Mr. TOWNSEND.—I understand that that is correct.

Mr. LYON.—Now, Mr. Layne, has the Layne-Bowler Corporation, yourself or any one of your licensees, marked in any manner the well pumping mechanism which you have manufactured and sold, and asserted to contain the invention of claims 9, 13 and 20 of this patent?

Mr. TOWNSEND.—That is objected to as calling for a legal construction of the claims in the patent.

Mr. LYON.—No. I am asking him if those he sold were marked in any manner. It is simply to show that we put the statutory notice on them all. I am simply asking whether on every one of them they put out they did the necessary marking.

The COURT.—He may answer.

A. Yes.

Mr. LYON.—Q. How did you mark them?

A. The numbers and the dates of the patents issued covering such structures.

Q. And the word "patented"? A. Yes, sir.

Q. In other words, the word "patented" and the day and date of the patent? A. Yes, sir.

Cross-examination.

Mr. TOWNSEND.—Q. That patent marking, I suppose, also carried with it this reissue patent, No. 13,467, September 24, 1912, for the whole mechanism?

Mr. LYON.—We object to that as immaterial

(Testimony of M. E. Layne.)

and irrelevant. This is simply encumbering the record. There are a large number of other patents. It is immaterial in this case whether there [572] are others. We are not suing on that patent. It is not cross-examination.

Mr. TOWNSEND.—The materiality of it is this, that these so-called pumps that he has been talking about, the Layne & Bowler pumps, are made under this reissue patent, taken years later, and embodying changes, and not made under the other patent. I simply ask him whether his pumps bore that.

The COURT.—He may answer.

A. They bore both numbers, both the original patent and the reissue patent.

Mr. TOWNSEND.—Q. You said you got the defendant's pump from the Anderson ranch sometime last winter; can you give me the definite month?

Mr. LYON.—Mr. Townsend, I do not want to interrupt you, but I will tell you now that I will prove the definite date by another witness, and also prove its transfer to Los Angeles.

Mr. TOWNSEND.—If you will state the date you got it, and the date Mr. Layne saw it, that will be sufficient.

Mr. LYON.—May 19, 1919. It arrived in Los Angeles about three weeks later.

Mr. TOWNSEND.—Q. Mr. Layne, you stated that you did not bring suit until the time that this suit was brought in December last, for lack of evidence, and that you deferred bringing suit until you had, as you thought, proved the infringement: Is that correct?

(Testimony of M. E. Layne.)

Mr. LYON.—You have the wrong date. This suit was filed in September, last, either in September or October.

Mr. TOWNSEND.—Well, we can get the exact date when it was filed.

The CLERK.—It was filed October 6, 1919.

Mr. TOWNSEND.—October, 1919. [573]

A. Yes, that is what I stated.

Q. When did you first hear of the incorporation of the Western Well Works?

A. Did you say when, or why?

Q. When? Was it 1915, or 1916?

A. I could not tell you the year.

Q. Was it as early as 1918?

A. I don't believe that I heard of it until I returned from the east, after my illness, when I was confined in the hospital at El Paso. It was in the latter part of 1918, as I now remember it.

Q. Refreshing your memory a bit, can't you carry your recollection back a couple of years, and don't you know that the Western Well Works was doing business as early as the year 1916, selling these pumps? A. No, sir, I do not.

Q. Don't you know that as early as 1915, the latter part of 1915, or the early part of 1916, one of these pumps in the neighborhood of Salinas, and in the neighborhood of where there was located a well-digging apparatus over which you had a controversy?

Mr. LYON.—I don't wish counsel to waste time under a misapprehension. Mr. Layne, himself, personally, was not connected with this particular

(Testimony of M. E. Layne.)

plaintiff at that time, and he had nothing to do with the matters that you refer to. Of course, he heard of it by hearsay, but that is all.

Mr. TOWNSEND.—Maybe you can answer the question and it will shorten this up. Did not plaintiff have knowledge of the existence of the Western Well Works as early as the latter part of 1915 or the early part of 1916?

Mr. LYON.—Some time in 1916; I cannot fix the exact time.

Mr. TOWNSEND.—And the plaintiff also knew that the defendants were manufacturing a type of turbine pump? [574]

Mr. LYON.—Yes, and the plaintiff in this case was asserting that they were infringing, and the defendant was denying that, and we were endeavoring to ascertain exactly what they were doing.

Mr. TOWNSEND.—Your stipulation that they were threatening infringement answers my question.

Mr. LYON.—We were threatening suit during all that time, and were endeavoring to get to an issue with the defendant, and endeavoring to get an actual statement of what the defendants were actually putting out. And I suppose in that connection, Mr. Townsend, you will stipulate that you wrote, you had better find out exactly what we are doing before you bring suit.

Mr. TOWNSEND.—That was in December, 1918, when your attorneys in the east were threatening all of our customers, so we wrote a protective letter.

Q. It is also true, is it not, Mr. Layne, that prior

(Testimony of M. E. Layne.)

to the bringing of this suit on October 6, 1919, the defendant, Western Well Works, brought suit against the present plaintiff, in the Superior Court of the County of Santa Clara, to restrain the Layne & Bowler Corporation, the plaintiff herein, from threatening and otherwise attempting to intimidate its customers.

Mr. LYON.—Objected to as immaterial, irrelevant and incompetent, and not cross-examination; it has no bearing upon the issues of this case whatever.

Mr. TOWNSEND.—Equitable estoppel is one of the defenses.

Mr. LYON.—There is no estoppel pleaded.

Mr. TOWNSEND.—Yes, it is in the last paragraph; I read it yesterday.

The COURT.—I think I will let him answer, if he knows. He [575] may answer "Yes" or "No."

Mr. LYON.—We will stipulate that you brought suit at that time. If you produce the papers they can go in evidence. We will put in our answer. I suppose you will stipulate also that the Court denied you an injunction?

Mr. TOWNSEND.—After issuing a restraining order.

Mr. LYON.—The Court issued an *ex parte* restraining order upon your behalf, and then upon a hearing denied a temporary injunction and vacated the restraining order.

Mr. TOWNSEND.—I will offer the papers in that San Jose suit, with your Honor's permission,

(Testimony of M. E. Layne.)  
as Defendant's Exhibit "A."

Q. Mr. Layne, the plaintiff corporation has been a somewhat extensive advertiser in the past, has it not? A. Yes, sir.

Q. I show you a page from the Sacramento "Bee," Wednesday, December 31, 1919, and ask you if that is not the advertisement of the Layne & Bowler Corporation, plaintiff herein?

Mr. LYON.—We object to that on the ground that it is entirely irrelevant and immaterial to the issues in this case, and not cross-examination. The issue that we have to try here is solely the question, Has this defendant infringed upon the rights of the plaintiff? There is not even a cross-complaint, nor would the Court have jurisdiction of it, if there was malicious advertising against them.

The COURT.—What is the purpose of this?

Mr. TOWNSEND.—Equitable estoppel, that the plaintiff does not come into court with clean hands. It is always a good defense in an injunction on any matter, independent of infringement, or not.

The COURT.—The objection is sustained as not being cross-examination. [576]

Mr. TOWNSEND.—Q. Mr. Layne, in regard to Plaintiff's Exhibit 2, which shows an installation of a pit pump, I don't suppose you would have the Court understand that that is the system that is not used to-day?

A. The system that is used to-day almost universally is our system of enclosed shaft to protect the bearings.

Q. That is not an answer to my question.

(Testimony of M. E. Layne.)

The COURT.—You mean in case a pit pump is used, is that the type?

Mr. TOWNSEND.—Yes, sir.

A. When a pit pump is used, this is one of the types that is commonly used, but the pit pump is almost entirely being replaced, and there are very few new installations made of the old-style pit pump.

Q. I want you to answer this question: Is it not a fact that to-day a large number of pit wells are dug? A. Not to my knowledge.

Q. Not to your knowledge? A. No, sir.

Q. Have you been extensively over the irrigation fields recently?

A. Yes, we have our traveling men over the fields all the time.

Q. Is it not the fact that a large number of pit pumps are used to-day?

A. Only where the water plane is close to the surface and low lifts prevail.

Q. There are conditions under which, no doubt, the pit pump is desirable over the so-called enclosed line shaft, or turbine pump?

A. In no place is it desirable, but there are places where men have not the means to install the other, and they think it is cheaper with a shallow well to get along temporarily with a pit pump than to use the other.

Q. Referring to your patent, Mr. Layne, I mean the patent in [577] suit, will you state just what features shown in the drawings of the patent in suit, particularly Figure 1 and Figure 5, that in

(Testimony of M. E. Layne.)

actual practice you have not used, indicating the parts by the numbers shown in the drawings?

The COURT.—Can't you call his attention to them? You, doubtless, know what you have in mind. Ask him whether he has used them.

Mr. TOWNSEND.—Very well, your Honor.

Q. For instance, taking Figure 5, the wedges, 33, which contact with the well casing, 16: Have you ever used those?

A. At the time of my invention—

Q. Just answer "Yes" or "No."

A. We have not used a pump that would go in the bore of a well.

Q. I am asking for an answer to my question: Have you ever used the wedges, 33, for positioning the pump at any point in the well?

A. The wedges are not made for positioning the pump in the well.

Q. Please answer "Yes" or "No." Have you used those wedges, 33, for the function specified in the patent, or at all?

A. We have never used the wedges.

Q. Have you ever used the toggle numbers, 34 and 35, which connect with those wedges?

A. No, sir.

Q. Have you ever used the parts represented by the rods or links, 32, which connect with the toggles? A. No, sir.

Q. Have you ever used the rods or links, 29, which connect with the wedges, 33?

A. No, sir, those all being parts necessary to function the wedges as they were intended.



(Testimony of M. E. Layne.)

Q. And, referring to Figure 1, have you ever used the sliding sleeves, 28, 31, for manipulating those respective links, 32, 29?

A. They all refer to the wedges, which we have not used. [578]

Q. And, likewise, you have not used the stem members, above 27 and 30, to connect with those sleeves? A. We have not.

Q. Likewise, referring to Figure 5, have you used the stuffing box, 41?

A. No, sir, we never have in that particular form. We have used a brass or metal sleeve there, thoroughly lubricated, which performs the same function.

Q. Then your answer to my question is you never used the stuffing box, 41? A. No, sir.

Q. And you have never used the adjusting mechanism shown by the sprocket chain, 46, and the sprocket, 42, 42', 42'', shown in Figure 6 of the patent?

A. All being parts of the packing gland, we never have used it.

Q. And you have never used the pipe, 44, which is shown in Figure 5, down to the bottom of the shaft tubing? A. No, sir, we never have.

Q. And not using that, you have not used any other means to manipulate that sprocket chain: That pipe had a double function, 44, admitting lubricant and also working the adjustments of the screws of the packing gland?

A. No, sir, it was never intended for the admission of lubricant.

(Testimony of M. E. Layne.)

Mr. TOWNSEND.—If your Honor please, the patent would be the best evidence on that point, because it expressly states that the chief function of the pipe—the dual function of the pipe, 44, is to admit lubricant—rather, is to discharge lubricant or to admit air—perhaps I am slightly in error about that, and to manipulate the sprocket wheels by which the gland may be tightened.

Mr. LYON.—We do not admit that at all, your Honor.

The COURT.—Well, is that in the patent?

Mr. TOWNSEND.—I want to be sure about that. In regard to [579] the adjustment of the packing gland, the second column of page 2 shows it.

The COURT.—The question is as to whether or not that pipe was used for the admission of lubricant. I understood you to say that the patent so claimed.

Mr. LYON.—Just refer to the second paragraph of column 2, page 2, commencing at line 83.

“This pipe or tubular shaft 44 also serves the purpose of providing convenient means for forcing the liquid out of the pump shaft casing. By forcing air in at the top of the casing 20, by means of the pipe 52, the liquid can be forced down to the bottom of said casing 20, and by means of the small opening 45, in the bottom of the tubular shaft 44, the fluid can be forced out at the top 54, and keep the casing clear in order to leave the bearings clean therein and not interfere with the working of the pump, or by forcing fluid in at the

(Testimony of M. E. Layne.)

top 54, the operation will be reversed, and the fluid ejected from pipe 52."

On page 3, lines 73 to 79, he says:

"I consider it of great advantage also to arrange the pump shaft in a closed casing with stuffing-box at surface of ground at top of pump, so that by the use of the packing boxes an air-tight chamber can be maintained, and water kept out of the casing 20, or kept filled with clean liquid, if desired."

There is somewhere the matter of alternative action.

The COURT.—Isn't that alternative action you refer to the paragraph you have already read in column 2, page 2?

Mr. TOWNSEND.—I think so. It is at least used for discharge where it is not used for admission. It is used for [580] the admission of air. I will amend my question. I think the patent, though, speaks for itself.

Q. I understand, Mr. Layne, you have not used the pipe, 44? A. No, sir.

Q. Now, referring further to the same drawing, have you ever used the sectional shaft, 39 and 39', with loose sliding connections at their abutting end? In other words, spline the shaft and giving the sections a limited movement with relation to one another?

A. In our construction we have used in one or two instances a method of that kind, but our general practice is to use the screw and flat coupling.

Q. Where you use the spline section in the ex-

(Testimony of M. E. Layne.)

tended form of your patent, here, where the sections may slide inside of the sleeves, 48 and 48', being the thrust collar into which the shaft sections are splined, and loosely movable with respect to one another, such a construction would not permit of putting any weight on the shaft above, would it?

A. It only provides in such instances for carrying the weight of the shafting that is directly connected to the lower portion of such bearing.

Q. Such a loose coupling method would not permit of suspending the impeller from the top, would it?

A. No, sir. That was intended for deep lifts, where the proposition was supposed to have been carried in different loads.

Q. Consequently, this method of impeller suspension and the shaft coupling have never been put into use by you? A. Only in a few instances.

Q. It never has become your commercial product? A. No, sir.

Q. You have never used the thrust collars, then, 48 and 48', have you?

A. Not for thrust purposes, but for the shaft bearing purposes we have used them exclusively. [581]

Q. You have used a single thrust collar, like 48, in Figure 5, at the bottom of your pump structure?

A. We have never used the thrust collars in the two, only in very few instances; we have only used the collars connecting the shaft by thread methods.

Q. And you have done away with the use of the

(Testimony of M. E. Layne.)

thrust collars, 48, that we see working on the bearings?

A. So far as contracting the bearings, we have never used that as a commercial product, containing the bearings for thrust purposes.

Q. Simply to make it clear by reference to the defendant's model of the plaintiff's patented pump, which I will ask to have marked Defendants' Exhibit "B" for identification, the thrust collars and the bearing construction shown here, which have been marketed according to the patent, have not been used in actual practice?

Mr. LYON.—We object to counsel using the model for cross-examination, unless the witness has an opportunity to examine it. The witness has never seen it. There are features of it that do not exactly correspond with the patent. We think the Court should be fully advised with regard to that. It should not be just generally marked and then withdrawn. If the witness is going to be examined at all in regard to it, he should be given an opportunity to see that it compares with the structure; he should be given an opportunity to state whether it is correct or incorrect.

Mr. TOWNSEND.—I will not insist on the question, except—

The COURT.—I think he can state whether those particular features correspond to the drawing of the patent. It would not take him very long to determine that. You may go on.

Mr. TOWNSEND.—I will withdraw the question, your Honor. We [582] will identify the

(Testimony of M. E. Layne.)

model later. I wanted to make it clear—

Mr. LYON.—It would not take him more than five minutes to look at the model, and then he can answer any of your questions.

The COURT.—What is it you want?

Mr. TOWNSEND.—I wanted to make it clear that the thrust bearing was a construction not employed. I think he has answered that.

The COURT.—There is nothing before the Court, gentlemen. Proceed.

Mr. TOWNSEND.—No further cross-examination.

#### Redirect Examination.

Mr. LYON.—Q. Mr. Layne, Defendant's counsel has pointed out to you a number of features which are shown in the patent in suit, that you said that you have not used in your commercial structures; then, in view of your testimony that the commercial structures which you have embodied in well mechanism and sold, have become so generally in use, to what features, then, in this patent, do you attribute such popularity, and the general adoption by the public?

Mr. TOWNSEND.—Your Honor, that is immaterial and irrelevant, and calls for an expression of opinion which cannot help the Court in construing the patent. The patent is the best evidence. That is opening a wide field for speculation.

Mr. LYON.—There is no speculation to that, at all.

The COURT.—The objection is sustained.

Mr. LYON.—Q. What features of the patent in

(Testimony of M. E. Layne.)

suit are present in the commercial structures of well mechanism sold by you and to which you attribute the success thereof, or which are essential to success?

A. First, the structure is such as would [583] permit the putting of a large capacity pump in the bore of a well, eliminating the use of the pit.

Mr. TOWNSEND.—Your Honor, that is not an answer to the question, and I move that it be stricken out. He is being asked for the features.

The COURT.—He will come to that, I assume.

A. (Continuing.) And second, the specifications show clearly—

The COURT.—No, that does not quite answer the question. What features of the commercial product that you put on the market do you regard as essential?

A. The features that we have used that are covered by the patent are the enclosed line shaft by the protecting casing, which holds the bearings, and permits the lubricating of the shaft through which the power is transmitted from the earth's surface into the pump. Second, this method of transmission of power eliminates the cutting out of the bearings from the sand that is being pumped.

Mr. LYON.—Q. In other words, Mr. Layne, it is the enclosed line shaft feature—

Mr. TOWNSEND.—Now, one minute: I object to that as leading; let the witness testify.

Mr. LYON.—All right. That is all. I think the Court understands that.

The COURT.—Q. How do you insert or inject

(Testimony of M. E. Layne.)

the lubricant in your commercial type?

A. The commercial type is right there. It is just the same as we do it in the patent; it is just the same as they do.

Mr. TOWNSEND.—I move that that last part of the answer be stricken out.

The COURT.—Yes. Just answer the question. Has that been offered in evidence? [584]

Mr. LYON.—Not yet. We will offer it in evidence. The commercial structure of the plaintiff company is offered in evidence as Plaintiff's Exhibit 8.

The COURT.—This unit that you have offered in evidence does not show where the lubricant is inserted. The head is not here.

Mr. LYON.—No, it is not here.

The COURT.—Q. Where is it inserted—at the head?

A. Yes, at the top. It enters the top in exactly the same manner as the other, and follows the casing, and down into the pump neck.

Mr. LYON.—Q. It is gravity fed?

A. Gravity fed. It is gravity feed wherever only one or two of the pumps are used in series, one pump or two pumps; where there is more than one pump, or generally, where there are more than two, it becomes necessary to put pressure on, as a general thing.

The COURT.—Q. You use ordinary lubricating oil?

A. Yes, any kind of lubricating oil can be used, or clear water, as long as there is no sand or dirt



(Testimony of M. E. Layne.)  
in the lubricant being applied.

Mr. TOWNSEND.—Q. Your whole pump enclosure there within the shaft casing is assumed to be filled with oil, isn't it?

A. No, sir, not necessarily. Where it is working on gravity, and where it is working on vacuum, it just drops down through, but where we are working under a high pressure we usually inject the oil in under a slight pressure.

The COURT.—Q. What becomes of the oil after it works down through the several bearings to the pump?

A. It enters into the water being pumped, in either case.

Q. Through what outlet?

A. In our structure, it enters right through the bottom end of the lower bearing; in their structure it— [585]

Q. I am talking about yours.

A. Just through the bottom bearing. We don't provide any vent; it just comes out in the water.

Mr. TOWNSEND.—You see, your Honor, they admit a stuffing-box in freedom of action.

Mr. LYON.—Q. In regard to the patent in suit, how would the structure, as you have shown it in your drawings, operate in that regard, as to the oil or lubrication system?

Mr. TOWNSEND.—The patent is the best evidence.

The COURT.—I suppose his question is for the purpose of getting his construction and interpretation; you can ask him where he finds such a claim.

(Testimony of M. E. Layne.)

A. It works the same.

Mr. LYON.—Q. You have shown a stuffing-box over 41, Figure 5; with such a stuffing-box around a small rotating drive shaft, what condition of closure could be maintained?

A. Only loose closure.

Q. Please explain to the Court a little more fully what you mean by that.

A. Any packing gland that is sufficiently tight or closed against a shaft so that it absolutely shuts out the flow of lubricant, whether it be water or oil, through the same, usually burns and becomes inoperative; the consequence is we must leave the packing slightly loose, so that a sufficient amount of either water or lubricant passes through the packing gland in quantities so that the same is lubricated.

Q. Then, in your opinion, based upon your experience in the manufacture and sale of these pumps, how does the long sleeve bearing which you use in the place of this stuffing-box, 41, compare with the stuffing-box 41?

A. It performs the same function in identically the same manner.

Q. And as to the degree of closure?

A. In the same manner, only [586] that the metal at that point will permit of greater wear with less looseness.

Q. In other words, the long sleeve bearing will remain to a greater degree of tightness for a longer time than the stuffing-box? A. Yes.

(Testimony of M. E. Layne.)

The COURT.—Q. Why doesn't the water work up through that bearing?

A. In their structure—

Q. No, I mean in your structure.

A. In our structure, it would, if it is under high pressure. As I said, under high pressure we inject our lubricant under pressure to offset that pressure, and so the oil, then, is pressed in under slightly greater pressure than it is where it works on vacuum.

Q. Then you keep your casing full of oil?

A. Yes, it presses it down, where it is working under high pressure. Where it is working under gravity feed, where there are only two or three stages, then it is only gravity, and it drops right down and works out. But where the pressure above the point at which the power is applied is very great, then the gravity feed will not give satisfaction, and we then put the lubricant in in that case under pressure. But where the water is being discharged at the earth's surface and not forced above the surface, that is not necessary.

Q. I don't quite understand that, if the water is being discharged at a point as high as the power is applied.

A. Suppose this floor were an irrigating field, and we simply pumped the water to a level sufficient to run it off in the field, the pressure against which the pump is working is only sufficient to deliver the water on the field. If we wanted to deliver it into tanks for public utility purposes, and use the pump for a double purpose, as a discharge pump and as a

(Testimony of M. E. Layne.)

lift [587] pump, wherever the water is delivered at a greater height than the surface of the ground at which the power is applied, at which the pump neck or discharge tee appears at the surface, in that case the water being boosted would have a tendency to give a greater pressure on the oil closing tube or protecting tube, and in that case we would put the oil under pressure in the tube to offset the booster pump pressure above.

Q. Yes, I understand that, but if you are lifting water that way, I would not think it would be necessary to keep the shaft casing full of oil.

A. It is only necessary to keep the shaft casing filled with oil sufficiently so that the flow of oil is coming out below. That assures both lubrication and protection as long as it works down.

Q. The head of the oil would always have to be higher than the head of the water?

A. Yes, and the reason for that being possible in a centrifugal pump is that the center of all centrifugal pumps is on the vacuum side of the pump. The periphery of the runner is the discharge portion. Therefore, the pressure at the point at which the shaft-protecting tube is connected, being the center of the pump runner, is under less pressure at that point than it is at the periphery of the runner, and consequently, when the pump is in operation the pressure on the discharge side is greater than on the vacuum side, and for that reason the lubricant can gravitate down to the pump through the shaft-enclosing casing; in other words, it makes it possible for a lower pressure to exist in the oil-protecting cas-

(Testimony of L. R. Nash.)

ing than exists in the discharge casing, due to the fact that the vacuum caused the runner.

(A recess was here taken until two o'clock P. M.)  
[588]

**AFTERNOON SESSION.**

Mr. LYON.—Plaintiff offers in evidence as Plaintiff's Exhibit 9, circular of the Western Well Works, Inc., that they use in advertising for sale their pumps, and in that connection, in passing, I call your Honor's particular attention to a statement of the circular that: "As regards lubrication, no stuffing-box glands are necessary in our patent construction. Advantage is taken of the inward water leakage, from discharge column to the shaft bearing, and with the water accumulation is mixed an emulsifying oil of vegetable base. The resultant—a thin lubricant—is fed down the pipe shaft-bearings, finding an outlet at the bottom of the discharge column."

(The circular is marked "Plaintiff's Exhibit 9.")

**Testimony of L. R. Nash, for Plaintiff.**

L. R. NASH, called for the plaintiff, sworn.

Mr. LYON.—Q. You live where, Mr. Nash?

A. San Jose.

Q. You appear here in response to a subpoena?

A. I do.

Q. In what business are you engaged?

A. Machine-shop.

Q. How long have you been in that business?

A. With the Nash-Englehart-Silva Company a little less than eight years.

(Testimony of L. R. Nash.)

Q. How far is your place of business from that of the Western Well Works, Inc.?

A. Next door.

Q. Did you ever do any work for the Western Well Works, Inc., in the manufacture, installation or repair of deep well centrifugal pumps?

A. We manufactured some of them for a while.

Q. How was the first of those manufactured, in so far as the enclosing casing or tube around the drive shaft was concerned?

A. In what way do you mean?

Q. Were they loose or tight at the joints of the enclosing casing? [589]

A. The discharge pipe was screwed into the coupling, and the tube slipped over the hub of the bearing.

Q. There was a slip joint, originally? A. Yes.

Q. Was it loose?

A. Not loose; it was what you would call a slip fit, you put it on by hand.

Q. At any time was that changed?

A. Yes; I don't remember how long we made the ones with the slip joints, but afterwards we made them with a tighter fit on the tubing.

Q. Do you know why?

A. To prevent leakage.

Q. I call your attention to Plaintiff's Exhibit 4, known here as the Anderson pump, and particularly to the joints of the enclosing tubing; that is the tubing that you are referring to as originally having the slip joints—this one around the driving shaft?

A. This part here (pointing).

(Testimony of L. R. Nash.)

Q. Do you know what was the reason for afterwards making those having a tight fit at that connection?

Mr. TOWNSEND.—That is objected to. It is evidently a guess on his part.

Mr. LYON.—Q. Under whose instructions did you make that connection to the driving shaft?

A. Mr. Halstead's.

Q. Mr. Halstead of the Western Well Works?

A. Yes.

Q. Did he give you any reason for doing so, or did you know of any reason at the time?

A. To prevent leakage of the water into the line shaft.

Q. Into the line shaft? A. Yes.

Q. Within the last six weeks or two months have you had occasion to make any extensions or repairs on any of said Western Well Works, Inc., centrifugal pumps at your place?

A. We did not make any extensions, no.

Q. What did you do?

A. We had a job putting the extensions on [590] a pump; Mr. Halstead's firm furnished the extension.

Q. Did you examine that to see whether in that extension the enclosing tube was a tight fit on the hub, or not.

Mr. TOWNSEND.—If your Honor please, it seems to me the examination should be confined to matters occurring before the suit was brought, not something that occurred in the last three or four weeks.

(Testimony of L. R. Nash.)

The COURT.—Overruled.

A. I did not examine it in particular in that line, but I happened to look at the coupling; a tube was slipped on there, and it had a larger size at the neck of the bearing where the tube slips on.

Mr. LYON.—Q. What would such a larger size indicate?    A. That it would make a tight fit.

Q. At what portion of the bearing was this larger size?

A. The bottom part; that is, the *male* part of the coupling; the tube slips over down at the shoulder, the bottom of it.

Mr. LYON.—You may take the witness.

Cross-examination.

Mr. TOWNSEND.—Q. When was it you made the first parts for the Western Well Works?

A. Some time in 1915; that is when we started.

Q. These so-called tighter fits that you made subsequently were not such tight fits that under working conditions no water could get in? You would not say it was impossible for any water to get in through that joint?    A. Not at first; no.

Q. Were those parts where they telescoped, one to the other, always exactly the same size?

A. No.

Q. Will your pipe section which fits over the hub of the bearing sometimes be larger in one case than in the other?

A. On the [591] straight part; yes.

Q. In reaming down the tapered end of the bearing, will that diameter vary at times?    A. Yes.

Q. Your reaming tool, in other words, or your



(Testimony of L. R. Nash.)

lathe tool will cut at slightly different diameters in treating one section and another? A. Yes.

Q. And the same way in treating the cutting down of the tapered ends of the hubs? A. Some.

Q. So that you are not always going to get the same degree of fit with every part that is put together that you do with others?

A. No, not on the taper part; that is the only part that is really tight fit.

Q. But these diameters, both on the inside of the tube and the outside of the taper, vary, you say?

A. That is what the taper is for, to take care of that irregularity.

Q. Are the tubes always of the same length, the tube sections always of the same length? A. No.

Q. And, therefore, would not that taper on the hub assist somewhat in taking care of variations in the length of the tube?

A. The taper takes care of it, because the hole in the end of the tube is straight and has a sharp corner, and it slips over, and that is tight, and then it starts to get a larger diameter, say 1/16th of an inch.

Q. That taper offers compensation for the variation in the length of the two sections? A. Yes.

Q. Likewise, Mr. Nash, I suppose if the tube is removed for repair, occasionally the interior diameter of the tube that slips over the taper will vary at times? A. Yes.

Mr. TOWNSEND.—That is all. [592]

Redirect Examination.

Mr. LYON.—Q. Mr. Nash, you said at first those

(Testimony of L. R. Nash.)

joints were not tight. What do you mean by that?  
Did you mean the first ones that you made?

A. Yes.

Q. Did the first ones have the taper? A. No.

Q. After that you put in the taper to insure the tight joint? A. Yes.

Recross-examination.

Mr. TOWNSEND.—Q. I understood from your statement at first they were tight when they were new and put on there.

A. I meant on our first order of work we did for them; I don't remember how much we did, or how many, but it was for a little while. We first made them with the tube part to slip over by hand, over the hub of the bearing, and that hub was straight, and it did not have the taper at the bottom.

Q. Every time that you slip a tube over its hub section and remove and put it back, each time the part changes its relative diameter? A. Yes.

**Testimony of Henry C. Folsom, for Plaintiff.**

HENRY C. FOLSOM, called for the plaintiff, sworn.

Mr. LYON.—Q. Where do you live, Mr. Folsom?

A. San Jose.

Q. At the present time, what is your occupation?

A. I am in charge of the installing of the Layne & Bowler Corporation.

Q. Were you ever employed by the Western Well Works, Inc., of San Jose, the defendant in this suit?

A. I was.

Q. Doing what?

(Testimony of Henry C. Folsom.)

A. I had charge of the installation of pumps.

Q. Of what pumps?

A. Of the Western Well Works turbine pumps.

Q. About when did you commence that employment with them?

A. About 1916; that is, I was not permanently employed at that [593] time, but I commenced on their work.

Q. At that time, were they putting out a deep well centrifugal pump which had a tube around the drive shaft? A. They were.

Q. Intermediate bearings at the end of each section of the tube? A. Yes.

Q. How were those sections of tube mounted on those first pumps that you installed for them?

A. The end of the tube was reamed straight and slipped over a tapering hub.

Q. Was that joint where it was slipped over tight or loose? A. Tight.

Q. Would the first joint leak or permit water to enter the joints? A. Not those that I examined.

Q. They were all tight? A. Yes.

Q. Do you know the Anderson ranch, I think it is, near Stockton, California? A. I do.

Q. Did you install any of the Western Well Works, Inc. deep well turbine pumps on that ranch?

A. I did.

Q. How many of them? A. Four.

Q. What were the numbers of the wells?

A. Numbers 2, 3 and 4.

Q. How were those sections of the enclosing casing connected on those installations, loose or tight?

(Testimony of Henry C. Folsom.)

A. They were tight.

Q. Would they permit, or would they not permit the entrance of water into the enclosing tube at those joints? A. I would say they would not.

Q. Under whose instructions did you make those installations? A. Mr. Halstead's.

Q. Mr. Halstead, who is one of the defendants in this case? A. Yes.

Q. I show you Plaintiff's Exhibit No. 4, one of the pumps from the Anderson ranch, and call your attention to this white chalk [594] at the bottom of one section of the shaft-enclosing tube. Do you know what that is?

A. I would say it is white lead.

Q. Why would you say it was white lead?

A. Because there was a can of white lead provided with each shipment, provided for that purpose.

Q. In making the installations at the Anderson ranch, did you use white lead at these joints?

A. I did.

Q. For what purpose?

A. I should say for sealing the joints.

Q. Under whose instructions?

A. Under Mr. Halstead's.

Q. What effect has white lead, when so used?

A. It will stop corrosion and act as a seal.

Q. Approximately when were these Anderson ranch installations, to which you have been referring, made?

A. If I remember right it was the forepart of 1917, the ones that I put in.

Q. Did you ever see any of these connecting joints

(Testimony of Henry C. Folsom.)

between the section of the shaft-enclosing tubing and the section which forms the bearing use anything but white lead?   A. No.

Q. Haven't you used any gasket, or any other kind of element?

A. I never did but on one occasion, one old pump that I pulled up.

Q. What was the occasion of that?

A. I suppose the gasket was in there to seal it.

Q. Whose pump was it?

A. It was the Segar pump, at Mountain View.

Q. Of whose manufacture?

A. The Western Well Works.

Q. Did you ever have any occasion to pull any of the other installations of the Western Well Works, Inc., than this one?   A. I did.

Q. Did you have occasion to so pull such installations on account of leakage into the shaft-enclosing casing?   A. I did.

Q. Please explain fully what you mean in that connection, and where and when? [595]

A. There was one on the Nielsen ranch, or Prospect Road, and another one on the Jepsen ranch, on Prospect Road; there was water leakage through the tube, and we pulled the tube and put tight tubes on it.

Q. Under what circumstances did you do that work? What was the reason for it, and for whom?

A. I did it under the instructions of the Western Well Works as repair work; there was trouble with the water coming up around the shaft.

Q. What was the result of the water coming up around the top of the shaft?

(Testimony of Henry C. Folsom.)

A. To prevent any lubricating oil from going down.

Q. What was the object in making this joint tight?

A. To keep the water that was coming up in the column out.

Q. Keep the water out of the enclosing casing, was it? A. Yes.

Q. You have mentioned two such installations, in which you have pulled the Western Well Works, Inc., pumps. Any other that you remember?

A. The Prattville Cannery at Santa Clara; I changed the bearings there; that is the hub, or the tube, I should say.

Q. Did you change them in order to make them tight at the joint? A. Yes.

Q. And to prevent water getting into the enclosing casing? A. Yes.

Mr. TOWNSEND.—I object to that as leading.

Mr. LYON.—What was the object?

A. To prevent the water from going into the tube.

Q. How about the Stockton Water Company, at Stockton; did you pull one of the pumps there?

A. I did.

Q. For the Western Well Works? A. Yes.

Q. What did you do there, and for what purpose?

A. I changed all of the hubs, that is, all of the combination couplings, in [596] order to get hubs that were tight.

Q. Did you use white lead in any of those that you replaced? A. All of them.

Q. I think you said that was the written instructions for installation as furnished to you by the Western Well Works? A. Not written.

(Testimony of Henry C. Folsom.)

Q. Oral?     A. Oral.

Q. From whom did you receive such instructions?

A. From Mr. Halstead.

Q. You referred to removing and repairing a pump at the Stockton Water Company. Was there more than one installation that you so removed there?

A. One.

Q. Just one?     A. One.

Q. Will you look at this Plaintiff's Exhibit 4 and state if you can identify it as the pump that you put in?

A. I would say that was the pump, or an exact duplicate of it.

Mr. LYON.—That is all.

Cross-examination.

Mr. TOWNSEND.—Q. You are related, I believe, to one of the defendants in this case, are you not?

A. Not what you would call a relation.

Q. You are a brother-in-law of Mr. Vaughan?

A. Through marriage, yes.

Q. And your relations with the defendant has not been entirely amicable?     A. Not that I know of.

Q. You left the employ of the Western Well Works, did you not, on the invitation of the Western Well Works?     A. I did.

Q. You sought to give the impression that the use of white lead at the joint formed by the slipping over of the section of the tube, shaft tube over the hub, was for the purpose of forming [597] a tight joint, and sought to give the impression that the use of white lead was not generally employed. As a matter of fact, in all of the installations, didn't you al-

(Testimony of Henry C. Folsom.)

ways use the white lead?     A. I did.

Q. And didn't you use white lead for the purpose that you have incidentally mentioned, to prevent the corrosion of the two iron parts coming together? Wasn't that the purpose of the use of the White Lead, to keep those parts from rusting when the water encountered it?

A. That and sealing it also, was my impression.

Q. Your impression; I am not asking your impression, but I am asking for the fact, as to whether the white lead put between the two metal parts that fitted loosely would prevent corrosion?     A. Yes.

Q. And preventing corrosion would prevent the parts freezing together?

A. I do not get your question.

Q. The white lead between the two metal parts in close contact will prevent those two metal parts freezing together?     A. Yes.

Q. Most of those bearings are submerged, are they not, or in the water the greater part of the time?

A. They are.

Q. Those bearings are always under the water during the operation of the pump, are they not?

Mr. LYON.—We object to that question. The witness has not referred to any bearings removed. Counsel means the connection. We would like to have him specify it.

Mr. TOWNSEND.—The connections, I should say—the connection of your tube with the bearing of the hub—those are always under water, are they not?

A. When the pump is in operation.



(Testimony of Henry C. Folsom.)

Q. And continuously in operation? A. Yes.  
[598]

Q. You know that white lead does not dry when under water—you know that?

A. I never noticed that in particular.

Q. You know that it will harden on its exposure to the atmosphere? A. Yes.

Q. So if these joints are moistened with white lead under water they do not dry out, do they? A. No.

Q. Now, do you know anything about the action of the rotating shaft on this loose-fitting sleeves or tight-fitting joints, or whatever you want to call them, with white lead in between? Is there ever any motion, due to the shaft, between those telescoping parts?

A. I would not say there was, unless the pump was vibrating.

Q. If your pump is driving, isn't there always some vibration?

A. That I would not say, they are always, because they are down where you cannot see them.

Q. Don't you know that shaft always has some vibration? A. That I don't know.

Q. Haven't you stated that you have installed a great many of these pumps in the wells? A. Yes.

Q. Have you ever seen them work? A. Yes.

Q. Did you ever notice the operation of them?

A. Not below the surface.

Q. I am not talking about below the surface. You have seen them operate and know the conditions under which they operate, do you not? A. Yes.

Q. Don't you know that that shaft would have a tendency, working through the bearings, to keep the

(Testimony of Henry C. Folsom.)

joint and the bearing member which fits up into the tube section, in slight movement? I am just asking you now as a fair question.

A. That I would not say, one way or the other; that is, I am not prepared to say [599] on that.

Q. You are not prepared to deny the truth of my statement? A. I would not say to that.

Q. But, assuming there is such slight movement, what would you say in regard to the entry of water between the two members of the tube section fitting over the hub, as to the entry of water at some point along that line?

Mr. LYON.—We object to that question on the ground that it is entirely hypothetical, and not in accordance with the construction the witness has testified to, and it is assuming to ask the witness for hypothetical expert testimony, when the witness has been examined solely as to a question of fact, that is, the actual mechanical construction.

The COURT.—Sustained.

Mr. TOWNSEND.—We are not going to argue the objection, but he has testified to a tight joint, and I want to see if, with his knowledge, he would not admit that such movement, which I think is obvious to the Court, will be such as to admit water. I will pass it.

Q. You stated that you pulled the Nielsen and Jepsen pumps and you stated the purpose was for tightening the joints. A. Yes.

Q. Was there any other purpose that you drew that pump for? A. Not at that time.

Q. Didn't you draw those pumps for the purpose

(Testimony of Henry C. Folsom.)

of taking out the old bearing and put in the spiral groove bearing?

A. That was after that was done, when it was replaced with these.

Q. You pulled it again?

A. I pulled it the second time; it leaked after the first replacement was made.

Q. You did pull it one time and take out the smooth bearings and introduced the spiral bearings?

A. Yes. [600]

Q. What was the purpose of those spiral groove bearings?

A. As it was explained to me, they would conduct the oil down the shaft.

Q. The oil?     A. The lubrication.

Q. What was the lubrication employed?

A. At that time it was a common oil, that is, the common, ordinary lubricating oil.

Q. Will you name the brand of any common oil that they used at that time?

A. They used Zerolene at that time.

Q. Do you mean that they used Zerolene or common oil exclusively for lubrication?

A. They did at that time.

Q. What time was that?

A. That was about two years ago.

Q. Two years ago would be 1918?

A. Somewhere about that time.

Q. Now, give us about the year?

A. I could not give you the exact date.

Q. What season of the year was it?

(Testimony of Henry C. Folsom.)

A. Some time around—I could not give the exact date.

Q. *What season of the year was it?*

A. *Some time around—I could not give the exact date.*

Q. You say it was two years ago.

A. Approximately two years.

Q. When they pulled the pump and put in the spiral grooved bearings?

A. I think that was it.

Q. And that they were using zerolene at that time?

A. I believe they were.

Q. Do you know?      A. Yes.

Q. How was that zerolene applied to the bearings, in what method?      A. By a drop oiler from the top.

Q. Gravity feed?      A. Gravity feed.

Q. What was the use of those spiral grooved bearings?

A. To conduct that lubrication down the shaft.

Q. Was there nothing mixed with that oil?

A. Not at that time. [601]

Q. What other method of lubrication then, or at any other time, has the Western Well Works employed, to your knowledge?

A. Later they used an emulsifying oil.

Q. Explain the operation of the use of the emulsifying oil?

A. It was employed the same way, dropping the oil.

Q. What was the idea of emulsifying oil, rather than a common lubricant, like zerolene?

A. So that it would mix with the water when it came in contact with any water.

(Testimony of Henry C. Folsom.)

Q. Where would it come in contact with water?

A. Wherever the water happened to be down in the tube line.

Q. Down in the tube line?      A. Yes.

Q. That water in the tube line came in through these loose joints, didn't it?

A. I would not say that it did.

Q. You would not say that it did not, either, would you?

A. My impression was that any water that came up in there came through the drain tube below.

Q. Came through the drain tube below?

A. Yes.

Q. How would that water get up from the drain tube below past the spiral grooved bearing?

A. I don't know that it came up past the spiral grooved bearing; I would not say as to where that emulsifying oil met the water; that took place inside the tube.

Q. You are testifying that there was an emulsion formed in the tube line.

A. At some point where the emulsifying oil came in contact with the water.

Q. Did you ever take a pump down after the emulsifying oil was employed?      A. Yes.

Q. What did the interior indications point to you as being the condition as to whether there had been oil in there, or an emulsion in there?

A. When we took it apart the oil ran [602] out. You could not tell what was in there.

Q. The oil ran out?

A. The oil ran out at the bottom of the tube.

(Testimony of Henry C. Folsom.)

Q. You say "oil." A. Oil, or lubricant.

Q. You mean lubricant, do you not?

A. Whatever lubricant was used.

Q. As a matter of fact, you know very well that no sufficient quantity of oil was ever used to entirely fill that shaft tube?

A. I would not say as to how much went in there, it was dripping constantly.

Q. Don't you know, as a matter of fact, the talking point was the emulsion factor?

Mr. LYON.—We object to that as immaterial, what the talking point was.

The COURT.—Sustained.

Mr. TOWNSEND.—Do you know of your own knowledge what the action of the spiral groove would be?

A. I never saw one under operation, that is, where you could see what the action would be.

Q. Do you know what that casting is?

A. We would term that a combination coupling of the Western Well Works.

Q. That has spiral grooves, has it not?

A. It has.

Q. It is such a coupling as you put into the Jepson and Nielsen pumps? A. Yes.

Q. Did you put such a coupling into the Stockton pump? A. I did.

Q. And you recognize that casting as the stock coupling for the last several years of the Western Well Works?

A. The general appearance; I would not say it is exact; it has the general appearance of it.

(Testimony of Henry C. Folsom.)

Mr. TOWNSEND.—I will ask that this be marked “Defendant’s Exhibit ‘C’ for Identification.” [603]

(The casting was marked “Defendants’ Exhibit ‘C’ for Identification.”)

Q. You referred to the Stockton pump. What were the conditions of operation of that pump, if you know? A. In what way?

Q. How deep was the pump in the well?

A. Somewhere around 40 feet, I think; I would not say its exact depth, but about that.

Q. What was the water level?

A. It was less than 40 feet; I have not any data with regard to the exact level.

Q. What height was it pumping water above the pump head?

A. It went up as high as 60 pounds—from 40 to 60 pounds pressure.

Q. It was pumping considerably above the surface? A. Yes.

Q. Pumping under high pressure? A. Yes.

Q. What was the condition that you found there, that you were confronted with?

A. The water came out through the shaft in a small stream.

Q. Around the shaft; you mean out through the drain pipe?

A. Out through the top bearing—what they term their top bearing.

Q. In other words, the drain pipes were not of sufficient area to take care of the leakage water that was coming into the shaft tubing?

A. I presume that was in through the shaft tubing.

(Testimony of Henry C. Folsom.)

Q. It was coming into the shaft tubing from the discharge column?

A. It was my impression it was coming through the top bearing of the pump.

Q. I am not asking for your impression, I am asking for the fact, if you had more water in the shaft tube than your drain tubes would take care of.

A. Yes.

Q. That was coming in somewhere from the well?

A. Yes.

Q. As a result, there was so much more water in that tube, and [604] the pressure was so great, that it came out around the bearings at the top of the pump? A. Yes.

Q. What did you do to try to overcome that?

A. I changed the bearings.

Q. You put in there the spiral grooved bearings, like Defendants' Exhibit "C" for identification?

A. The original one was a spiral bearing; I put in one with a tighter hub.

Q. But you found your spiral grooved bearing would not even then take care of the water?

A. No.

Q. You still had an excess of leakage water?

A. Yes.

Q. Were you ever able to satisfactorily meet that situation and overcome the difficulty of an excess of leakage water into the shaft tubing?

A. Not while I was on the job.

Q. When you pulled a pump, Mr. Folsom, and wanted to make some repairs on it, did you have any difficulty, or much difficulty in tubes loose from



(Testimony of Henry C. Folsom.)

the hub? A. I have at times.

Q. And other times, what has been your experience? They come right off by hand, don't they? A. You usually have to twist them off.

Q. But you usually can take off a tube suction from its hub by hand? A. Very seldom.

Q. But you have done that? A. I have done it.

Q. You have done it frequently?

A. No, not frequently.

Q. Occasionally you find one that is stuck?

A. More often you find them stuck than loose.

Q. That depends particularly, does it not, on whether the pump has stood idle for a long while.

A. I never noticed any difference between the two.

Q. You are not able to answer that question definitely, whether the standing of the pump idle for a long time and the water low [605] in the well makes any difference?

A. I would not be prepared to answer on that.

Q. I understood you to say you pulled the Nielsen pump.

A. Yes. That is, I had charge of the pulling of it; I did not actually do the work myself.

Q. After you say you tightened the connections you put it back again? A. Yes.

Q. You made reference to a Segar pump. You know, I suppose, that was the very first pump that the defendants manufactured?

A. I believe it was; that is, one of the first. I would not say it was the first.

Q. One of the first? A. Among the first.

(Testimony of Henry C. Folsom.)

Q. It was originally installed away back in 1915, was it not? A. I believe it was.

Q. When you put back the Nielsen pump, did you replace it with a new tube?

A. I believe there was some new tube where the original one was loose.

Q. Did you replace it with new bearings?

A. I would not say whether new bearings were put in it or not. I do not remember definitely.

Mr. TOWNSEND.—That is all.

Redirect Examination.

Mr. LYON.—Q. In these pumps as they were originally assembled to be put into the well, I mean by that the Western Well Works, Inc., pumps, that you have been speaking about, did they use any heavy grease in connection with them at all?

A. When I went there they did.

Q. In what way?

A. We packed all the inside of each tube, that is, filled the space between the tube and the shaft.

Q. The shaft-enclosing tube is the one that you refer to? A. Yes. [606]

Recross-examination.

Mr. TOWNSEND.—Q. In packing these bearings with this grease, what would be the action of the spiral groove when the pump was started in rotation?

The COURT.—He said he packed the tubes.

Mr. TOWNSEND.—Am I to understand you to say you packed the tube with grease? A. Yes.

Q. How much did you put in, say, in a 3-inch

(Testimony of Henry C. Folsom.)

tubing, and 100 feet long?

A. We usually only packed the grease around the shaft before we slipped the tube down; we used, generally, about 30 inches on a tube, all we could make stick on, adhere to the shaft, and then we slipped the tube over.

Q. I do not quite understand you.

A. We used heavy grease.

Q. You greased the tube first? Is that right?

A. No.

Q. I mean, you greased the shaft first?

A. We packed the heavy grease on the shaft and then slipped the tube down over it.

The COURT.—What length of shaft?

A. I should say about 30 inches.

Q. At the top, or bottom?

A. At the bottom of each section of the shaft.

Q. You mean 30 inches of each section?

A. 30 inches of each section.

Mr. LYON.—This was a 5-foot 6-inch shaft?

A. 6 foot 8.

Mr. TOWNSEND.—Q. That application of grease around the shaft for 30 inches was to allow the shaft to slip easily into the bearing, was it not?

A. The shaft was already in the bearing. [607]

**Testimony of S. N. Hall, for Plaintiff.**

S. N. HALL, called for the plaintiff, sworn.

Mr. LYON.—Q. Where do you reside, Mr. Hall?

A. Los Angeles.

Q. You are employed by the Layne & Bowler Corporation? A. Yes.

(Testimony of S. N. Hall.)

Q. At any time did you go to the Anderson ranch near Stockton? A. Yes.

Q. I show you Plaintiff's Exhibit 4 here on the floor; did you ever see it before? A. I did.

Q. When did you first see it?

A. I saw that as it was assembled in the pump on May 19, 1919.

Q. Where?

A. On the Anderson & Barngrover ranch near Stockton.

Q. Under what circumstances did you see it at that time?

A. It was assembled in the pump as we pulled it from the well.

Q. When you say "we," who was "we"?

A. Carlson and a couple of helpers of Anderson & Barngrover employees.

Q. What was the purpose of pulling that pump out?

A. The purpose was to get a specimen of the pump being put out by the Western Well Works.

Q. Now, what did you do as you pulled this pump from the well?

A. We first built an extra-high derrick—

The COURT.—Is that material, how he did it?

Mr. LYON.—I want to show a test that was made right there on the ground, your Honor.

The COURT.—Show the test, but how he pulled it is not material.

Mr. LYON.—Q. You had a high derrick. Do

(Testimony of S. N. Hall.)

you know what these two photographs are that I hand you?

A. Yes. They are photographs of the pump as we pulled it up through this derrick and shot the upper end of the pump with the head through the top of the derrick, and then rested the pump on the surface of the ground. [608]

Q. Those were taken at the time?

A. Those two were.

Mr. LYON.—We offer these in evidence and ask that they be marked.

Mr. TOWNSEND.—Objected to as immaterial and irrelevant.

The COURT.—The objection is overruled.

(The photographs were marked "Plaintiff's Exhibit 10" and "Plaintiff's Exhibit 11.")

Mr. LYON.—I show you another photograph. Do you know what that is? Is that a part of that same test that was made?

A. No, this does not refer to the test that we had then.

Q. This one?

A. Yes, this is a part of the test that we gave it at that time.

Q. What does this show?

A. It shows where the water is squirting from under the lower end of the discharge column.

Q. What is this white spot here?

A. The purpose in making that test was to detect or discern whether the water would leak through the by-passes coming from the shaft bearing to the outside of the discharge column.

(Testimony of S. N. Hall.)

Q. What is the point which I now call your attention to right there?

A. It is the by-passes or conduits leading from the shaft casing.

Q. When you had this Anderson pump standing up on the derrick, as in the two photographs you have identified, what did you do? Describe what you did?

A. We placed the lower end—we removed the pump bowls and then we fixed a stopper, a plug, that was driven about  $1\frac{1}{2}$  inches in the lower end of the bearing which screws onto the upper pump bowl and lower end of the shaft casing, in order to prevent the water from coming into the lower end of the shaft casing through the shaft bearing; then we placed the weight of the entire discharge column, including the pump head, [609] on a smooth board, so as to form a water-tight joint; then we filled the discharge column full of water to running over.

Q. How many feet of discharge column was there in that test?

A. There was about between 36 and 40 feet, I suppose; we never measured it up definitely.

Q. Now, what did such test demonstrate to you?

A. The test demonstrated that there was no water passing into the shaft casing.

Q. What demonstrated that to you, Mr. Hall?

A. From the fact that while the discharge column was under this pressure of water, being filled to the top, the water would not come into the shaft casing and then escape through the by-passes or conduits

(Testimony of S. N. Hall.)  
just above the pump bowl.

Q. The point that I call your attention to is an opening of one of these by-passes or drains?

A. Yes.

Mr. LYON.—We offer the photograph last referred to in evidence and ask that it be marked "Plaintiff's Exhibit 12." Your Honor will see that there was no water in that photograph coming out of that drain.

(The photograph was marked "Plaintiff's Exhibit 12.")

Q. I show you another photograph and ask you if you know what that is?

A. That is the disassembled pump from a second well we pulled on the Anderson & Barngrover ranch.

Q. Is that also a Western Well Works, Inc., installation? A. It is.

Q. Now, on these pieces of shafting up here there seems to be something sticking. What is that?

A. It was heavy cup grease.

Q. And that was in this pump when you pulled it? A. It was.

Mr. LYON.—We offer this in evidence and ask that it be marked "Plaintiff's Exhibit 13."

(The photograph was marked "Plaintiff's Exhibit 13.") [610]

Q. Now, after making this test in the derrick, what did you do with this Western Well Works, Inc., pump?

A. We took it down and then we put it in storage with the Stockton Transfer & Storage Company,

(Testimony of S. N. Hall.)

and then it was shipped in a few days to Los Angeles.

Q. What was done with it there?

A. We then first cut out a section of one of the discharge columns.

Q. Did you cut it as it is here exhibited in Plaintiff's Exhibit 4? A. We did.

Q. Did you make any test of any other portion of that assembly?

A. Yes. We assembled a section of the discharge column having a combination coupling bearing on each end and then we made a screw threaded plug having a central bore passing around the projecting hub of the bearing, which had a packing gland, which we packed.

Q. What was the purpose of that?

A. In order to fill the section with water, and put it under hydraulic pressure, to ascertain whether the water would then enter the section of the shaft casing.

Q. What did such test disclose?

A. It disclosed the fact that the water could not pass through the end connections around the hub of the bearings.

Q. When you say end connections of the hub, do you mean the connections at the end of the section of the shaft-enclosing casing?

A. Between the outside diameter of the hub and the inside diameter of the shaft casing.

Q. It could not get in at that point to the shaft-enclosing casing? A. It could not.



(Testimony of S. N. Hall.)

Q. How much pressure did you use, do you remember, in that test?

A. I first ran it up to something like 90 pounds, but the discharge [611] pipe would not hold externally; we had to take the couplings off and fill them with a composition and put them back; then we were afraid to run the pressure up higher than something about 50 pounds, as I remember it.

Q. When you say the discharge pipe connections, you mean where the discharge pipe is screwed into this connector section that we are speaking of?

A. Yes.

Q. At that point, when you got that 90 pounds pressure it leaked? A. It leaked.

Q. I show you a photograph. Was that photograph taken during the last test? A. Yes.

Q. Is that apparatus which we have marked Apparatus No. 6 the apparatus that you used in that test? A. Yes.

Mr. LYON.—I offer the photograph last referred to in evidence; it is the same test, but it shows the end connection.

(The photograph was marked "Plaintiff's Exhibit 14.")

Q. Now, the joints were in the same condition during this test as they were when you first removed them from the well? A. They were.

Q. No changes of any kind had been made by you? A. None at all.

Q. Have there been any changes made in these hub connections, or the ends of the shaft-enclosing sections in Plaintiff's Exhibit 4 since it has been re-

(Testimony of S. N. Hall.)

moved from the Anderson well?

A. There has been no change, other than the cutting out of the pipe, as you see it.

Q. In other words, simply the removal of the metal which has been removed there? A. Yes.

Q. Otherwise, it is in the same condition as when it first came out of the Anderson well? A. Yes.

Q. Do you know what these two photographs are?

A. They are [612] photographs of the section referred to, except they show one of the pump bowls below the section.

Q. In other words, it would be like Exhibit No. 4, except the first pump bowl is shown in place?

A. It is.

Q. There are two photographs of that exhibit?

A. There are.

Mr. LYON.—We will offer these in evidence so that your Honor may have them.

Q. You have said that after you applied this 90 pounds pressure pipe you applied a composition. Where did you apply that composition?

A. I applied it in the thread of the discharge pipe.

Q. The discharge pipe?

A. And in the fan holes and threads of the combination couplings.

Q. Did you put any on the connection between the hub and the ends of the shaft-enclosing casing?

A. We did not.

Q. Or any other part? A. No.

Q. Now, Mr. Hall, referring to Plaintiff's Exhibit No. 4, there is a white substance here that has

(Testimony of S. N. Hall.)

been identified as white lead. When did you first see that in that particular exhibit?

A. Well, I first saw it when we disassembled the pump on the Anderson-Barngrover ranch.

Q. It was actually white-leaded at these joints at that time, was it? A. It was.

Q. How did that white lead compare with the composition which you afterwards used to prevent leakage in the water-discharge column, do you know?

A. The combination that I applied was a compound that they ordinarily use for sealing the threads in assembling pipe.

Q. You usually use white lead or red lead for that purpose?

A. No. This was a different composition, I don't remember the [613] name of it now. It is shown on the section of the discharge column that is shown in the photograph under hydraulic pressure.

Mr. LYON.—You may cross-examine.

Cross-examination.

Mr. TOWNSEND.—Q. Referring to the photograph, Plaintiff's Exhibit 14, I note the date on here, "Photograph taken October 1, 1919, operator N. B. Moss, Photo by Stagg": Is that the date the tests were made?

A. I don't remember the date, but it was sometime about that date.

Q. That photograph was presumably taken concurrently with the making of that Los Angeles test: Is that not true? A. Yes.

Q. You say you had pulled this same pump out

(Testimony of S. N. Hall.)

of the well in May, 1919? A. Yes.

Q. Had it been in the water in the meantime?

A. Well, I did not see the water.

Q. Until you injected water under pressure into the discharge section? In other words, this had been out of the well?

A. It had been out of the well.

Q. And out of use during all of these months, from the time you pulled it until the time you took this photograph in October, 1919?

A. We were a day or two getting it ready for making tests before that time.

Q. When you made your tests on the Anderson-Barngrover ranch that you have testified to, where you pulled the pump out of the well and stood it with the head projecting high above the bearing, did you in that test operate the shaft? A. No.

Q. The pump was not tested under operating conditions then, was it?

A. No; the pump bowls were removed.

Q. Wasn't that pump of the Defendant's, Plaintiff's Exhibit No. 4, in the plaintiff's laboratory undergoing certain tests between [614] the time you pulled it in May, 1919 and the time you took these photographs and made this test in Los Angeles in October, 1919?

A. I don't understand the question.

Q. Read the question.

(The last question repeated by reporter.)

A. It was there a part of the time.

Mr. LYON.—Q. Was it undergoing tests? That is the question.

A. It underwent tests during that time. It was

(Testimony of S. N. Hall.)

not undergoing tests all the time.

Mr. TOWNSEND.—Q. After these laboratory tests you made this test for pressure on the tube line: Is that right? A. Yes.

Mr. TOWNSEND.—That is all.

Mr. LYON.—That is all. If your Honor please, we have one witness, a Mr. Anderson, whom we wish to ask whether this pump was in the same condition when it was installed as when we pulled it up; in other words, that is all the testimony we wish of him. we are unable to produce him now, and we would like to close our testimony, reserving the right to put in his testimony when he is available. We were in touch with him last night, but he has failed to show up. With that reservation, we close our opening case.

Mr. TOWNSEND.—We are not to be understood as stipulating it was in the same condition as when installed, because we have any knowledge of that.

The COURT.—He is merely reserving the right to call the witness when he comes.

Mr. TOWNSEND.—I offer on behalf of the Defendant a certified copy of the file-wrapper and contents of the Layne patent in suit, and ask that it be marked Defendants' Exhibit "D."

Mr. LYON.—We object to that on the ground that the defendant [615] is estopped by the contract of October 1, 1914, from contending that the claims of the Layne patent in suit have any other, different or restricted meaning than as in said contract set forth. And if offered for the purpose of attacking the validity of the patent, on the ground

they are estopped from contesting the question of validity.

The COURT.—I think I shall let it go in subject to the objection. I will consider these matters together.

Mr. LYON.—And subject to a reserved exception to whatever ruling may be made?

The COURT.—Yes.

(The documents were marked Defendants' Exhibit "D.")

Mr. TOWNSEND.—I next offer as Defendants' Exhibit "E," a certified copy of the Judge Jack decision in the Getty case. It does not happen to be reported, but as a copy of the record in the Getty case I would like to have it before the court.

Mr. LYON.—Of course, that is subject to the last objection made, and it is also objected to on the ground it is immaterial and irrelevant, and upon the ground that it is superseded by the decision of the Circuit Court of Appeals in that case. Judge Jack was reversed in his decision.

The COURT.—I suppose it was merely for my convenience.

Mr. LYON.—Really, I suppose that the opinions of all of the courts in all of the prior litigation may be referred to by the court to see what was before them, and the records in such cases may be referred to in order to ascertain what was before the Court, but it is not proper to offer the opinions or the records in evidence. They are solely, under the practice, referable to by the Court, in order to ascertain what was passed on by the trial court. It

is understood that they [616] may be considered by the Court for that purpose.

(The document was marked Defendants' Exhibit "E.")

Mr. TOWNSEND.—I next offer a certified copy of an exhibit in the Getty case, showing a series of construction which was before the court, some infringing and some noninfringing, and ask that that be marked Defendants' Exhibit "F."

Mr. LYON.—We object to this on all of the same grounds and on the special ground it is incompetent, and no foundation laid. It is a fragmentary showing, anyway.

The COURT.—Sustained.

Mr. TOWNSEND.—I offer as Defendants' Exhibit "F" a copy of the Eisler Patent, No. 522,518, dated July 3, 1894, for a rotary pump, for the purpose of anticipation and showing the state of the art.

Mr. LYON.—All of this prior art will be subject to the same objection, without the necessity of repeating it?

The Court.—Yes.

(The document was marked Defendants' Exhibit "F.")

Mr. TOWNSEND.—I next offer as Defendants' Exhibit "G" copy of the Crannell patent, No. 425,933, dated April 5, 1890, for a compound pump, which patent was referred to in the decision of the Court in the Getty case, and I believe in the Van Ness case.

(The document was marked Defendants' Exhibit "G.")

Mr. LYON.—The Eisler patent was also before the court in those cases.

Mr. TOWNSEND.—It was apparently not considered by the court.

Mr. LYON.—It was not referred to by the Court. I thought it might save Judge Dietrich some labor by stating what was new and what not new. [617]

Mr. TOWNSEND.—I think the Eisler patent is to be considered as entirely new evidence, as we will present it in perhaps an aspect not before brought to the attention of any court in the construction of the Layne patent in suit.

I offer next as Defendants' Exhibit "H" a copy of the Northham patent, No. 633,474, dated September 19, 1899, for a rotary pump.

(The document was marked "Defendants' Exhibit 'H'.")

I offer as Defendants' Exhibit "I" a copy of the Farwell patent No. 691,123, dated January 14, 1902, for pumping and dredging apparatus.

(The document was marked "Defendants' Exhibit 'I'.")

I offer a copy of British patent 24,430, of 1894, to William Matther, apparatus for pump well bores, and ask that it be marked Defendants' Exhibit "J."

(The document was marked "Defendants' Exhibit 'J'.")

I offer British patent No. 12,886, of 1885, issued to Vojaceks, as Defendants' Exhibit "K."

(The document was marked "Defendants' Exhibit 'K'.")

I offer British patent No. 2774, of 1860, to David



Thomson, as Defendants' Exhibit "L."

(The document was marked "Defendants' Exhibit 'L'.")

I offer patent No. 705,844, dated July 29, 1902, to E. M. Ivens, deceased, for pump mechanism, and ask that it be marked Defendants' Exhibit "M."

(The document was marked "Defendants' Exhibit 'M'.")

Not waiving any of our objections to the admission of the contract to which reference has been made, and which has been produced as plaintiff's exhibit, I offer copies of the contracts of March 24, 1915, between Layne & Bowler Corporation, and [618] S. M. Halstead, second part, as Defendants' Exhibit "N," calling particular attention to the paragraph at the end, reading as follows:

"The second party hereby releases and grants back to the first party all his rights, title and interest in that certain contract October 1, 1914, between the Layne & Bowler Corporation and S. M. Halstead and P. E. Vaughan; and in consideration of the premises, the first party hereby agrees not to charge any of the second party's account with any transactions which may be hereafter had under the said contract."

(The document was marked "Defendants' Exhibit 'N'.")

I offer as Defendants' Exhibit "O," and subject, of course, to the previous objection, without waiving any of our rights in the premises, a copy of the subsequent contract of September 19, 1916, between the Western Well Works, Inc., as the first party,

and the Layne & Bowler Corporation as the second party, and call attention to the last paragraph of that contract, wherein it says:

“The party of the first part agrees to dismiss the suits now brought at Salinas against the second party, and both parties hereto agree to relinquish any claim for damage or liability, which either party may have, the one against the other, arising out of such transaction.”

(The document was marked “Defendants’ Exhibit ‘O.’”)

Mr. LYON.—In view of the offer of exhibits “X” and “O,” plaintiff objects on the ground that the same are incompetent, irrelevant and immaterial; the objection of incompetency is not because they are not the original instruments; we admit they are true copies, subject to correction, the same as our contract of October 1, 1914, but in the first place, one of these contracts does not purport to [619] be and was not signed and made on behalf of Halstead and Vaughan, but only Halstead; in the second place, they in no manner, in or under their terms or conditions refer to or set aside paragraph VII of the contract of October 1, 1914, nor do they in any manner affect the covenant of the validity or of the scope of the patent. They simply are a reversion of certain rights, and the settlement of another lawsuit; if your Honor will look at these two contracts, I think you will find that they are totally irrelevant and simply needlessly encumbering the record in this case.

The COURT.—They may go in.

Mr. LYON.—We ask for an exception.

Mr. TOWNSEND.—Certain depositions, your Honor, have been taken *de bene esse* on behalf of the defendants. The depositions are, first, that of Mr. Frank H. Jackson, and that of Mr. Robb, both now located in Los Angeles, but formerly connected with the Byron Jackson Iron Works, of this city; and in order to shorten the record and relieve us of the reading of the depositions, we have reduced them to narrative form, which is the manner of presentation that Judge Van Fleet has frequently followed; of course, the reading may be subject to any objection plaintiff may make. There are certain other depositions taken in matters in Wisconsin, given by Mr. D. W. Mead, a professor of hydraulic engineering in the University of Wisconsin, one of the noted authorities in hydraulics in this country, and also the deposition of Mr. J. W. Alvord. These depositions have been reduced to narrative form, and Mr. Loftus will read it.

Mr. LYON.—We object to any such procedure upon the ground that the depositions were taken *de bene esse*, and we have not been served with any purported narrative form to which they [620] have been reduced, and it is not proper procedure. I do not think that there is any absolute necessity of counsel taking the time, even, to read the original depositions. I do not think the Court is going to be able to decide this case at the close of the hearing, and if the Court is going to take it under advisement, it will probably be able to read such portions as counsel desires to refer to; and, furthermore, our objec-

tions to certain portions of the depositions should not simply be run over by counsel purporting to make a narrative statement of them. Of course, the depositions, themselves, are subject to this same objection in regard to estoppel and the contract. I want to call the Court's attention to that, so that it will not be misunderstood.

Mr. TOWNSEND.—I think these depositions would enlighten the Court in regard to various matters, and I think defendant should be heard in the orderly progress of the trial, and the defendant ought not be estopped from a full presentation in order to give your Honor every opportunity to reach a conclusion at the end of the trial.

Mr. LYON.—I certainly object to counsel reading something that we have never seen. It is a novel procedure to me. A deposition taken *de bene esse* is not evidence until it is read in evidence, and I offer to stipulate it may be considered as read. I certainly object to any condensation that I know nothing about. I cannot listen to anything and accept it that way. Two-thirds or one-half of Mead's deposition is the quotation of letters upon which we rely to defeat the very defense that they assert. I have defeated that defense in Los Angeles on that very subject. It is for that reason, I say, we ought not to have an emasculated presentation. Let us consider the whole [621] thing as read, and let us refer to such things as we desire in the argument. I think it ought to be done one way or the other.

The COURT.—I think that is true, unless you

want to state at the present time in a general way the substance of the depositions, so as to give me the point of your testimony. I would listen to that, but it would have to be short and in simply a general way a sketch of the testimony.

Mr. TOWNSEND.—This is in order to save time. We will quote here and there from the depositions as we go along, and I do not think it will take very long. We ought to finish this in a couple of hours, at the most.

The COURT.—Are you through with the other testimony?

Mr. TOWNSEND.—No; I wanted to present this first, because some of our other testimony will bear upon this. I would like to dispose of the inert matter, as it were, before I come to the witnesses' testimony. It won't take so very long, your Honor, and I think we can present the salient features in a short time. I think we ought to be heard in regard to what our testimony is.

The COURT.—Oh, yes; if you desire to put this matter before me, you may read it now. Of course, as I say, I will simply take a general statement from you, but if counsel objects I cannot permit you to read it in narrative form.

Mr. LYON.—I have no objection to their making a statement of what they contend, so that they can go ahead with their case, if it will be considered that the Court will refer to the actual depositions.

The COURT.—Yes. Of course, I could read the depositions in a fourth of the time that you could read them here to me. You may start reading that,

and we will see how we will get along. [622]

(Thereupon, counsel proceeded with the reading of the narrative statement, pending the conclusion of which an adjournment was taken until Tuesday, September 7, 1920, at ten o'clock A. M.) [623]

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In the Southern Division of the United States District Court for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,  
Plaintiff,

vs.

WESTERN WELL WORKS, INC., et al.,  
Defendants.

**Proceedings Had September 7, 1920.**

Tuesday, September 7, 1920. [624]

In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,  
Plaintiff,

vs.

WESTERN WELLS WORKS, INC. (a Corporation),  
ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STAN-

LEY H. HALSTEAD, P. E. VAUGHAN  
and ALLEN W. ROSS,

Defendants.

Tuesday, September 7, 1920.

Counsel Appearing:

For the Plaintiff: FREDERICK S. LYON, Esq.,  
and WILLIAM K. WHITE, Esq.

For the Defendants: CHARLES E. TOWNSEND,  
Esq., and W. A. LOFTUS, Esq.

Mr. LOFTUS.—In these depositions of Frank Jackson and Robb, which were referred to at the last session, there is a stipulation between the attorneys to the effect that a certified copy may be admitted in this case. These depositions were taken in the case down in Los Angeles. I want to offer these, and ask that they be ordered filed.

In that connection there is a blue-print, Exhibit 2, which is certified and which is referred to in those depositions; it might be attached to the depositions instead of being offered separately, if there is no objection. [625]

Mr. LYON.—We have no objection, reserving, however, the possibility of error, and that they might be corrected if any error is found. The certification is by the stenographer, and not by the court. We are reserving, in the reading of the depositions in evidence, our general objection in regard to estoppel, etc.

The COURT.—Very well.

Mr. LOFTUS.—Now, in order to get over these depositions, the Jackson, Robb and Meade depositions all relate to substantially the same transac-

tion, Jackson and Robb being largely corroborative of Meade's testimony. The Meade deposition has three aspects. The first pertains to some preliminary discussions between Professor Meade and Byron Jackson, of San Francisco, and is shown in some correspondence and some blue-prints which I have separated here, and which I would like to have the Court glance over. There is so much data in that deposition that this may expedite matters a great deal if the Court will glance this over. That correspondence occurred in 1902. There are blue-prints there which are explanatory of the subjects discussed in this different letters. It will be noted that the question was first put to Byron Jackson by Professor Meade regarding a deep-well centrifugal pump, and that Byron Jackson replied that he was able to supply such a pump, and in fact had tested one in his shop in 1900, or in 1901, and sent blue-prints illustrative of that pump test. As a result of that correspondence, Professor Meade, who was a consulting engineer for the Pabst Brewing Company, entered into a contract with Byron Jackson to supply a commercial structure for the Pabst Brewing Company. The pertinent parts of the correspondence relating to the Pabst installation [626] are shown in these few letters which I have grouped here; and the blue-prints of the Pabst installation are shown there, also. Your Honor may see at a glance just what occurred in 1902. The Pabst matter came up in 1903. I think the subject was first opened up in March, 1903—I think it was on March 18th. That was some six weeks prior to the filing date of the Layne application for the patent which



is here in suit. On April 20, several days before Layne had filed, Byron Jackson had sent a formal contract which he asked the Pabst Brewing Company to sign, and in that communication he described exactly the structure Layne claims is covered by his patent.

Mr. LYON.—Your Honor will understand that these papers that are handed to the Court at this time I have never seen. These are not exhibits.

Mr. LOFTUS.—That is very true. To select them from the exhibits here would be quite a long task; there is so much data in the depositions.

Mr. LYON.—I do not agree that these are correct. I do not know that they are incorrect, but, however, I do not agree that they are correct.

Mr. LOFTUS.—That Pabst matter was started in March, the drawings were started in March, 1903. The correspondence continued and discussion was had over the terms of the contract. The pump was finally made and was tested here in San Francisco in, I think, June or July, 1903. The pump was then shipped east, and was installed, and was accepted in January, 1904. While plaintiff's counsel contends that these matters are not material, inasmuch as the pump was not actually installed and operated until after Layne filed, I think they are material, in view of the manner in which we have pleaded this defense, [627] that is to say, that Byron Jackson was a prior inventor and was using reasonable diligence to reduce his ideas to practice; and also that Professor Meade had knowledge of substantially the same invention prior to the date when Layne, the patentee of the patent in suit, conceived his inven-

tion. There is also some question as to the time when Layne actually conceived the invention of these claims in suit. The history of the Layne patent shows that very little was said about the enclosing casing, or about its being tight, or that the line shaft was cut off from the water, until there was an amendment in 1904. All of this correspondence will have some bearing upon the facts which will come out later. Now, those three depositions, of Meade, Jackson and Robb conclude what we term the Byron Jackson prior invention.

Here is one other depositions, which was taken in Chicago, and pertains to what is called the Alvord defense. John W. Alvord is a Chicago engineer. He is the patentee of United States letters patent No. 735,690, means for aligning pump shafts in well cases. That patent was applied for in 1902, in September, I think, and granted in 1903. It is true that these Alvord patents have been before the courts in some of the other litigation, but it will be noted that in those other suits the Alvord patents were merely set up as part of the prior art, set up as prior patents. The courts held that they had no weight in that connection, inasmuch as they did not become patents until after Layne had filed his application. However, in our case, we have pleaded John W. Alvord as having knowledge of substantially the same invention prior to the Layne date of invention, and also as being a prior inventor who was using reasonable diligence to reduce his [628] invention to practice or to patent the same.

As bearing upon the inequitable conduct of the plaintiff here, and possibly as showing an admis-

sion on the part of the plaintiff, that this phase of the Alvord defense presents a new question, I want to refer briefly to certain things which occurred at the time of the taking of this deposition, all of which are not shown in the record.

We served notice upon the plaintiff, I think in January, 1920, that we would proceed to Chicago to take the deposition of John W. Alvord. We did so. We arrived in Chicago I think on February 11, 1920. Prior to that time, one of the attorneys for the defendant had talked to Mr. Alvord and had been assured that he had this evidence in his possession, and was willing to produce it if called upon.

We arrived in Chicago on February 11, 1920, and went to Mr. Alvord, and asked him to take the stand and give his testimony. He refused to do it. He stated that he was busy on other matters and could not take the time to look up his records. He showed no disposition to find the time to do it, and even though we allowed him greater time in which to make preparations, he did not do so. We then resorted to a subpoena and had him put on the stand. Without refusing to talk, he was unprepared, he claiming that he had no time to look up his records. In order to give him further time, the taking of his testimony was, by a series of continuances, put over to March 2, 1920. On that date the real reason came out why he had refused to give this testimony prior to that time. I will read that part of his testimony. He explained that on February 2, 1920, which was after we had served

notice on the plaintiff that we would take Mr. Alvord's testimony,— [629] Mr. Alvord says:

“On February 2, 1920, Mr. J. B. Harmon, whose card left with me showed him to have been sales engineer of the Layne & Bowler Company, with headquarters at Memphis, Tenn., called at my office to take up the matter of my patents in connection with his company's operations. Mr. Harmon represented that in his opinion Messrs. Layne & Bowler were developing their ideas in the Patent Office on or about the time when I was at work similarly in developing my ideas. Mr. Harmon inquired what I would expect to receive from my patents in the matter, and I named him a price of \$5,000.”

In that connection, your Honor, I ask you to bear in mind that those Alvord patents had but about a year and a half to run, they would expire in about a year and a half.

“Thereupon, he asked me if I would give him a short option on that amount, and I gave him a 30-day option for the purchase of the patents. Mr. Harmon represented to me that those patents would be quite valuable to his company, and that they were doing a large business in the sale of these pumps, amounting, as he said, to some \$3,000,000 per year, and that the rice industry could not have been promoted without the use of the pumps in question, and the improvements which they and I had made. He further stated that if the

Layne & Bowler Company should own my patents, they could undoubtedly collect royalty from other companies which were using the same, and that he would recommend to Mr. Layne promptly the purchase of my three patents. Whereupon I had written out my proposition in writing, signing it, and gave it to him on that date."

That option was introduced in evidence as Defendant's Exhibit "A-12." [630] It is a letter written by Mr. Alvord to J. B. Harmon, Sales Engineer of the Layne & Bowler Company, dated February 2, 1920. It reads as follows:

"In accordance with our conversation this afternoon, I would propose to sell the Layne & Bowler Company all right, title and interest which I have in the patents relating to deep well pump shaft alignment and other related contrivances with reference to vertical centrifugal pump equipment, all for the sum of \$5,000 cash, with the understanding that these patents be used by your company, being known as the Alvord patents numbered as per Patent Office; and the further understanding that this proposition is accepted within thirty days from the date of your offer. I will further support said patents by competent testimony in court, if called upon to do so, at the rate of \$100 per day and necessary expenses."

Needless to say, that option was never taken up. When it expired, on March 2, 1920, Mr. Alvord evidently appreciated that he had been deceived

somewhat by Mr. Harmon, and he gladly consented to testify for the defendants in this case. In that connection, his testimony relates to dates when he conceived that pump aligning mechanism. It includes various drawings and photographs of the same. His earliest drawing, I think, is shown about May 20, 1902. The deposition is not as voluminous as some of the others, and I don't think it will be necessary to refer any further to it, except to point out that there is ample proof to show that Mr. Alvord had a complete conception of this invention, he had made drawings of the same early in 1902, which is long prior to any date which Layne may claim.

Mr. LYON.—The Alvord deposition, itself, is subject [631] to our same objection, your Honor, the objection of estoppel, etc.

The COURT.—Yes.

Mr. TOWNSEND.—In connection with the Alvord deposition, I offer the certified copy of file wrappers and contents of the Alvord patents, establishing the date of invention at least as early as the date of the filing. The certified copy of file wrapper of patent 735,690, can be marked Defendants' Exhibit "P"; 735,691 as Defendants' Exhibit "Q";, 735,692 as Defendants' Exhibit "R."

As Defendants' Exhibit "S," I offer certified copy of the master's report—

Mr. LYON.—Just a moment. I thought you had another file-wrapper to offer.

Mr. TOWNSEND.—No, just the three.

Mr. LYON.—To each one of those file-wrappers we object upon the ground of estoppel, etc.; and on

the further ground that they are immaterial, and self-serving, and incompetent. The only portion of the file-wrappers that could for any purpose be material in this case would be the original applications as filed. To all that is in the file-wrappers otherwise than in the original application of Alvord as filed, and so much of the record as shows the date of the filing, we object as immaterial, irrelevant and incompetent.

The COURT.—They may go in subject to the objection.

Mr. TOWNSEND.—As Defendants' Exhibit "S," I offer a certified copy of the master's report in the Los Angeles suit, as we have termed it, being the case of Layne & Bowler, a Corporation, Plaintiff, vs. The American Well & Prospecting Company et al., pending in the Southern District of California, Southern [632] Division, a report which was just recently made to the Honorable Oscar A. Trippet, the Judge of said court, and filed on July 13, 1920, in which he finds, with regard to the American Well & Prospecting Company's devices there used, that one used prior to the suit was an infringement, and the one used subsequently to the suit is a noninfringement. I suppose you will admit, Mr. Lyon, that these blue-prints are substantially correct, the one marked A and the one marked B?

Mr. LYON.—There is no objection to the master's report, save and except upon the ground of estoppel, and on the further ground that these defendants have participated in the taking of certain depositions, the Meade deposition in particular, in

the Byron Jackson case, and are probably estopped by privity in that case. We will argue that later.

To the blue-prints we object upon the ground that they are incompetent, no foundation laid, and not properly certified. I would not reserve that objection, may it please your Honor, if it were not for the fact that there is not enough shown in the blue-prints to show the facts in the case. One of the biggest contests in that case was at to what was the defendant's structure, and particularly what was the second structure of the defendant. Therefore, I must reserve the objection that the blue-prints are not sufficient to really show the Court what the structure of the defendant, either as first used or as second used by the defendants in that case was.

Mr. TOWNSEND.—I ask that this blue-print I have referred to be marked "Defendants' Exhibit 'T' for Identification," being the blue-print marked "A," and the blue-print marked "B" be marked "Defendant's Exhibit 'U' for Identification."

Mr. LYON.—If I had a blue-print that fully showed this [633] I would be very glad to produce it, but I haven't got one, and there was not one in the case.

Mr. TOWNSEND.—If your Honor please, I have one witness I can put on now before we have occasion to refer to the models. We will either have to have the models brought over from the other room, or else we will have to ask your Honor to move back to the room where the models are.

The COURT.—I think they will have to be



brought here, because it is intended that we shall occupy this room now.

Mr. LYON.—I will state that we were taken very much by surprise in that matter, your Honor, and we will have to get some men to move those structures over here; they are very heavy.

The COURT.—But you can proceed now, can't you?

Mr. TOWNSEND.—I can with one witness, any way, your Honor.

**Testimony of Emil T. Nielsen, for Defendants.**

EMIL T. NIELSEN, called for the defendants, sworn.

Mr. TOWNSEND.—Q. Mr. Nielsen, will you please state your name, your age, your residence and your occupation.

A. Emil T. Nielsen; age, 36; residence, Cupertino; occupation, orchardist.

Q. Cupertino is located near San Jose?

A. About ten miles from San Jose.

Q. Did you ever buy a Western Wells Works pump? A. I did.

Q. When?

A. In February; in January or February of 1919,—no, 1918; I beg your pardon, it was 1917.

Q. In January or February, 1917? A. Yes.

Q. Did you ever have any trouble with that pump?

A. It has given a little trouble. [634]

Q. Will you explain the nature of that trouble, and what you did?

A. Shortly after it was installed it developed a

(Testimony of Emil T. Nielsen.)

leak through the oil tube, water came out of the stuffing-box, washing all the oil up with it. In pulling the pump, in April, I believe it was, shortly after it was installed, at any rate, we found down seven lengths below on the surface a cross-thread which kept the oil tube part away from the boxing, and allowing an excessive quantity of water to enter there.

Q. What was the part that was threaded?

A. The casing.

Q. The discharge casing?

A. Yes, the discharge casing was threaded, and the coupling.

Q. What did you do to remedy that cross-thread on the discharge casing?

A. It was replaced.

Q. After that, did you have any further trouble with the pump?

A. The next year it ran all right; in November of 1919 it developed a vibration, and finally stopped, stopped working. Then down close to the bottom of the discharge column, in a place where the casing had been spotted up or trued up, too much metal had been cut away and it had parted.

Q. When you speak of "casing," do you mean the discharge column?

A. Yes, the 6-inch discharge column.

Q. Then what happened?

A. It evidently had been parted for some time, because the places were rusted over, and it allowed the whole thing to separate a little bit, and the water entered there in large quantities; no lubri-

(Testimony of Emil T. Nielsen.)

cant of any kind could get near it; it simply wore some of the boxing out.

Q. And when the casing parted and dropped, what happened?

A. It didn't drop. There was still a little bit of the casing left to hold it together.

Q. But the pump stopped operating?

A. Yes, sir. [635]

Q. What did you do to remedy that?

A. It was taken out and rebuilt and replaced.

Q. What sort of a pump have you there now?

A. The Western pump.

Q. Have you had any difficulty with it since it has been replaced or fixed over, since last year?

A. During the summer we lowered the pump and got into a crook in the well, the well was badly crooked down there, and the vibration of the shaft knocked out the same boxing.

Q. Your pump is installed in a crooked well?

A. It is now, yes.

Q. And that causes some vibration of the shaft, does it? A. It does.

Q. When you replaced the column in November of last year, do you know why the replacement was made?

A. The boxings have oil grooves in them, and my impression is that the replacement was made because the old oil grooves are cut straight down the side, and the new ones are spiral, and I believe Mr. Halstead wanted to make some tests on an old casing in a pit well.

Mr. LYON.—I move to strike out the answer of

(Testimony of Emil T. Nielsen.)

the witness upon the ground that it is the guess of the witness, especially that portion where he says, he believes or he thinks, upon the ground that it is incompetent.

The COURT.—The motion is granted.

Mr. TOWNSEND.—Q. In replacing the pump, was a change made in the bearings?

A. That change was made.

Q. They put in spiral bearings, in place of old straight bearings? A. Yes, sir.

Q. Did Mr. Halstead state any further reasons why he wanted to make the replacement?

A. Except that he wanted the old pump for testing purposes, and to examine it, and all like that.

Mr. TOWNSEND.—That is all. [636]

Mr. LYON.—No questions.

### **Testimony of D. J. Conant, for Defendants.**

D. J. CONANT, called for the defendants, sworn.

Mr. TOWNSEND.—Q. Will you please state your occupation?

A. I am engineer for the Western Well Works of San Jose.

Q. That is the defendant in this case?

A. Yes.

Q. How long have you been connected with the Western Well Works?

A. I first became associated with them in August, 1916.

Q. Are you familiar with the construction of the pump of the Western Well Works, and here

(Testimony of D. J. Conant.)

claimed to be an infringement in this suit?

A. Yes, sir.

Q. I show you a model, and ask you if you know what that is.

A. That is a model made substantially correctly with the pump we have built and are still building.

Q. Who made the model, or by whose direction was it made?

A. The model was made in our own shop, under my direct supervision.

Mr. TOWNSEND.—I ask that this model be marked Defendants' Exhibit "V."

Q. How does this model compare with actual pumps sold commercially by the Western Well Works?

A. If I may refer to the model, I will explain: The pump consists essentially of three parts—

Q. No, just answer my question: How does it compare in construction and design with the commercial pumps of the defendant?

A. The pump is identical with the pumps manufactured and sold by the defendant in so far as their lateral dimensions are concerned; that is, below this point on the top part, showing the bowl and this bracket are parts which complete the pump and are not exactly as manufactured; the head is larger and [637] carries larger bearings, etc.; but as regards the columns, they have been made from our standard patterns, and made with our standard forming tools, those always used in the shop. In the tube section, the length of shaft, length of discharge column, they are necessarily

(Testimony of D. J. Conant.)

much shorter, but they have the same inside and outside diameters, and the same clearances, having been made on our standard forming tools.

Q. Will you briefly describe the construction of the defendant's pump as shown by your model, Defendants' Exhibit "B"?

A. The pump consists of three essential parts, the pumping mechanism or the bowls, which are located on the bottom and shown here with just one; the discharge column, which contains the driving shaft, and the tube construction surrounding that, and the head, which rests on top of the ground.

Starting in at the bottom, first there is the bowl; these have been numbered; this bowl is marked No. 4; it is a casting which contains a runner or impeller, and passages to carry the water from the periphery of the impeller into a circular chamber, and discharge it through an adapter casting, which connects between that bowl and the discharge column. The bowl, 4, and the adapter casting, 17, are threaded together; there is a machine fit between the two, which makes a water-tight joint, being tightened down by threads, and it does not use any gasket for that joint.

Q. What is the number of the adapter casting?

A. 17.

Q. What is the discharge column number?

A. The discharge column in sections are 9b, 9a and 9. There are three shown. Connecting the sections of the discharge column are what are termed combination couplings, numbered here 17a and 17b. These are castings which not only pro-

(Testimony of D. J. Conant.)

vide connecting means between the discharge [638] section, 9b and 9a, but also carry a central hub supported on webs, which serves as a bearing for the shaft. On the ends of hubs, or the ends of this bearing, they are machined and provide a place for the tube, which is slipped over that and encloses this shaft.

Now, as to the connection between these different parts, the casing or discharge column has a special, straight thread cut on it, and screws down into both the adapter casting, 17, and the combination coupling, 17a, 17b, to a flat machined surface. It seats instead of tightening the threads by this construction as nearly as possible to a straight column. The same thing is true of the tubes, they are machined. But those tubes are shorter in the discharge column, in shop practice,  $1/32$ d of an inch. This is to provide so that the discharge column which carries the weight and is tightened to a seat will come to that seat before the tube seats at the ends on the hub. That means that the tube will not seat at the end of the hub, being shorter,—the discharge column tightens and the tubes will not seat. In this adapter bearing casting, 17, there are provided two tubes, designated here by the number 28. These tubes connect between the well and a recess surrounding the shaft, and spaced about midway in the bearing of casting 17. This discharge column connects with the discharge head by a threaded connection similar to these different column connections. That joint carries the weight of the pump. The impeller, placed in this bowl, is attached to the

(Testimony of D. J. Conant.)

shaft by means of a gib-head key, the head of the key being on the bottom in such a position that the runner cannot drop off without shearing the end of the key. The different shaft lengths, starting in with the runner shaft, [639] are connected by collars, shown here as 7, 7' and 7". The separate shafts are butted on a machine-faced surface, and terminating at the top of the pump, at the pulley. There is a thrust bearing placed under the pulley, and a nut that screws onto the top of the shaft and seats the pulley hub, blocked in position by a key, so that the weight of the runner shaft and the runner are carried on a pulley bearing on the top of the pump above this thrust bearing, so that the entire weight of the shaft is carried from the surface. At the top of the tubing column is a bearing which we term a tube bearing, marked here 11. That is threaded into the discharge head as a hub on the lower end which enters the top tube; when this is screwed into position, it forms a water-tight joint between the tubing bearing and the discharge head. This tubing bearing is provided with tapped holes to receive a pipe line and the method of lubrication. That is an ordinary drip-feed oil cup, which screws into an elbow attached to this pipe which I mentioned. There is a small recess at the top of this tubing bearing which provides an oil reservoir for this oil before it enters the tube and passes down. This tubing bearing is provided with a spiral oil groove, which assists in the passage of the oil from this recess. In the different sections of discharge casing tubing and shaft, they are made to the stan-



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dard length, each piece of discharge casing, except one in each pump, which is the one just below the discharge head, is exactly the same length; the tube sections are all of uniform length. The shaft lengths are uniform. This has been our method throughout the manufacture of pumps, in order to have interchangeable parts. In order to arrive at this, we have gages for the exact length of every part, and we have master gages to check these by. We [640] have gages for the threads, the diameter, the clearances. So that these parts are manufactured in quantity, on quantity production machines, or forming tools; and there is no hand fitting in the assembling of the pumps. There is an inspection and a checking of dimensions, and when they are checked they are put into stock. The pump is built of so many units; it is not a special pump. For instance, there are so many units, such as 9a, such as 17b, so many couplings, so many tubes, and these are put together in the field without any hand fitting.

Q. Is any weight carried on the shaft tubing sections which are marked as—

A. There is only one of them marked, and that is No. 8, shown on the top.

Mr. LYON.—We object to the counsel leading the witness.

The COURT.—I think he may answer that.

A. (Continuing.) There is no weight taken on the tubing connection, on the tubing itself, for the reason that tube lengths, as I stated before, are  $1/32$ d of an inch shorter than the discharge col-

(Testimony of D. J. Conant.)

umn lengths. The face on the bearing hub, which the tube would have to seat on, is exactly the same distance as the seat for the discharge column. Since the tube is shorter than the discharge column, the tube never seats on both ends at the same time. In some installations, it might seat on one end, and in the next installation seat on the other. It is purposely made shorter, so that the discharge column seats and the tube does not. Therefore, it cannot carry any weight but its own individual weight.

**Q.** How does the fit of the tube sections, 8, on the bearing hubs compare with the fit of the tube sections and the hubs in actual practice?

**A.** This pump model was built on our standard forming tools. The hubs were machined with standard [641] tools, so they would have exactly the same dimensions as those put out in practice. The tubes were reamed with our shop reamers, those which are used in standard practice. If there is any difference in fit between any of them now it would be due to putting them on and taking them off, which would make them slightly looser by that means; there has been no other change.

**Q.** Here is a casting which has been marked "Defendants' Exhibit 'C' for Identification"; I ask you if you know what that is.

**A.** It appears to be one of our standard combination 7-inch couplings.

**Q.** That shows the groove bearing, does it not?

**A.** That shows the spiral groove bearing.

**Mr. TOWNSEND.**—I ask that this be marked "Defendants' Exhibit 'C.' "

(Testimony of D. J. Conant.)

Mr. LYON.—You are offering it in evidence, are you.

Mr. TOWNSEND.—Yes, I am offering it.

Mr. LYON.—We object to it upon the ground that it is incompetent, and no foundation laid.

Mr. TOWNSEND.—Q. Do you know where that casting was made?

A. I did not see the manufacture of this casting, but to all appearances it is a casting made in our plant—not a casting made in our own plant, but it is the machine work that was done in our own plant.

Mr. LYON.—It is the machine work I am questioning, your Honor, and that is the reason I am objecting. If this witness is able to state that this is machined the same as the ones they put in their pump, then our objection will be withdrawn.

Q. Have you checked the machining on the hubs of that casting? That is what we want to know.

Mr. TOWNSEND.—Let me ask the witness a question. [642]

Mr. LYON.—We want to know if the witness, himself, has checked the hub, and the taper on the hubs of this casting.

Q. Do you know if that is as you put them out?

A. Are you asking me that question?

Q. Yes. A. Any casting that—

Q. Answer the question; have you checked this one?

A. I have not checked that one. I don't check any of them, except for special purposes.

Mr. LYON.—Then we object, your Honor. We want one of them as they put them out. We want

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somebody to be willing to stake this case on the truth of the exhibit representing the finished product as they use it. The whole question in this case will come right down to the matter of these measurements, this tapering and this construction.

Mr. TOWNSEND.—Q. Is this a stock casting of the Western Well Works?

Mr. LYON.—I object to that, your Honor, as leading.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—Q. Would you be able to identify a stock casting of your construction?

Mr. WHITE.—If your Honor please, the witness has already disqualified himself from answering this question. He has testified that he has not checked this up. He cannot say that that is identical in measurements with the casting they put out in their pumps. This is really a case, your Honor, of very fine measurements.

Mr. TOWNSEND.—Q. How does that compare with the stock casting?

Mr. LYON.—We object to that, if your Honor please, as immaterial, irrelevant and incompetent.

The COURT.—The objection is sustained. He has already [643] stated that he has not checked this up. Any testimony he might give in response to your question would be a guess or an opinion, merely.

Mr. LYON.—We have the instruments here with which to measure this.

Q. Do you know the measurements of that taper

(Testimony of D. J. Conant.)

on the hub, the diameter at the top and at the end? Do you know those measurements offhand, so that if we give you the necessary instruments you can measure this now?

A. No; I don't know those measurements.

Q. Do you remember the standard measurements according to practice?

The COURT.—I understood the witness to say he did not know offhand what the measurements should be or are.

Q. It that right, Mr. Witness?

A. There is one point in regard to these measurements that I cannot definitely state, the diameter of the hub at this point where it is straight is .006 of an inch less than the taper on the last  $\frac{3}{4}$  of an inch.

Mr. TOWNSEND.—Q. You mean that is what it should be? A. That is what it should be.

Q. Would you state that if this casting corresponds to those measurements that this is a true and correct hub casting of the defendant?

Mr. LYON.—We object to that as leading, your Honor.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—Q. Can you ascertain from the formula you have just given if that is a correct casting?

A. Providing I have instruments to measure it, yes.

Mr. TOWNSEND.—Mr. Lyon, will you furnish the instruments? You were offering to furnish instruments a moment ago.

Mr. LYON.—Before doing that, I want to know

(Testimony of D. J. Conant.)

what your [644] measurements are.

Q. What is the diameter at the top of this hub, and just below the shoulder that I now point at?

A. The dimension below that shoulder is not machined.

Q. Right there.

A. There is no shoulder excepting at the bottom of your pencil there.

Q. What is the diameter right at the juncture of that shoulder with the hub?

A. It should have a taper of 1/6000ths.

Q. What is the diameter?

A. In the manufacture there is no given diameter at that point.

Q. What is the diameter at the end of the hub?

A. The matter simply resolves itself down to this, that—

Mr. LYON.—I submit, if your Honor please, if the witness cannot answer that question he is incompetent to make a measurement.

Mr. TOWNSEND.—Q. What is the shop practice in determining the proper diameter and the taper of the hubs?

A. In our shop practice, we have Holton's steel gages, a gage which presses into the end of the tube, a gage which passes over the hub; there are trial and error fits on those. The forming tools which machine these are set at intervals during the process of manufacture; it might be a matter of three weeks, or four weeks, or six weeks. They are set to those gages. We set to a gage, but not to an exact dimension. We have these gages both as

(Testimony of D. J. Conant.)

master gages and as shop gages. It is for that reason I cannot give you the exact dimension of it.

Mr. TOWNSEND.—I submit, your Honor, that the witness has qualified himself to identify this as the Western Well Works casting used in the regular practice. I offer the casting in evidence.

The COURT.—Can't you identify it by somebody who does know? [645]

Mr. TOWNSEND.—I could bring the machinist from San Jose to identify it. If that is desired, I will do that.

Mr. LYON.—We have not had an opportunity to measure this up, your Honor, but we measured up a number of them out in the field.

Mr. TOWNSEND.—That is not in evidence, Mr. Lyon.

Mr. LYON.—Well, I am telling the Court something. If we had an opportunity to put Mr. Doble on this casting with his instruments, we could tell you whether we can stipulate to it, or not. I have been trying to get from this witness whether he knows. Evidently, this witness cannot make the measurements for me. Mr. Doble might be able to satisfy me whether this particular casting is or is not in accordance with those in the pumps. I suggest that if you have something else you can do, Mr. Townsend, we can let Mr. Doble take this casting and measure it. Really, it is immaterial what this particular casting is, the question is what is in the pump we have offered in evidence. That is the infringing article in this litigation, the Anderson pump which we have offered in evidence, and which

(Testimony of D. J. Conant.)

is on the floor of the courtroom.

Mr. TOWNSEND.—Supposing we pass the matter for the time being, and we will have measurements made.

Mr. LYON.—Would you mind letting Mr. Doble measure it?

Mr. TOWNSEND.—Certainly, go ahead and make all the measurements you want to.

Q. I show you another model, and ask you if you know what that is?

A. This is a model made after the drawings and specifications of the Layne patent in question.

Q. Who made the model, or by whose direction was it made?

A. This model was also made in our shops, and under my direct [646] supervision.

Mr. TOWNSEND.—I ask that this be marked "Defendants' Exhibit 'B'"; it was previously marked for identification.

Mr. LYON.—I don't like to make an objection to this model, but if the Court understands that in some particulars—I don't believe it is material myself—the model does not follow the drawings. There are a few changes from the actual drawings. If that is understood, it is all right. In our opinion it would be a matter of mere mechanical equivalents.

Mr. TOWNSEND.—There are slight differences with regard to connecting certain parts together by screw threads rather than a bolt.

Mr. LYON.—And the bearings are not put in identically the same. I noticed that.

The WITNESS.—That is the matter Mr. Town-



(Testimony of D. J. Conant.)

send just spoke of, that they are threaded in instead of clamped between two columns.

Mr. LYON.—And they lack one other feature of the patent. There is one shown here. There is one fastening here instead of a number of those, as the patent points out.

Mr. TOWNSEND.—Q. Do you know about any tests made of the Western Well Works pump in operation? A. Yes, sir.

Q. Who made those tests?

A. Those tests were made by Professor E. P. Lesley.

Q. Where were they made?

A. In a pit on the Conant ranch, in San Jose.

Q. Do you know the pump that was used for making those tests? A. Yes, sir.

Q. What was it?

A. It was a set of 10-inch pump bowls, new, and a new runner shaft, a discharge column which had been removed [647] from the Nielson well, on Prospect Road, San Jose, and a new head.

Q. Was that the Mr. Nielsen who just testified here this morning?

A. I was not in here when the testimony was taken this morning.

Mr. TOWNSEND.—It will be stipulated, Mr. Lyon, that it was the same Mr. Nielsen?

Mr. LYON.—I don't know anything about it. We will object to the test as not being the pump involved in this case. We are basing our case, so far as the allegation of infringement is concerned, on the Anderson pump in evidence. It is readily

(Testimony of D. J. Conant.)

seen that they could change this construction; whether they put out other pumps exactly like that, or not, will be a question for the master later. Our case is based on the Anderson pump in evidence, and not on what they might produce in some other line of pump.

Mr. TOWNSEND.—Q. Was that Nielson pump a Western Well Works pump? A. Yes.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. WHITE.—Q. I believe you stated that you entered the employ of the Western Well Works in August, 1916? A. Yes.

Q. At that time, did you become chief engineer of that defendant?

A. I was draftsman for the company at that time.

Q. At that time, were you familiar with the details of construction of these hubs projecting at either side of these bearings? A. Yes.

Q. Just describe the form of hub used at that time, in August, 1916, in respect to the presence of any taper, or the absence of any taper.

A. The hubs at that time, according to the drawings, which were the only thing I had to go by, were a straight hub. [648]

Q. And for what period of time after August, 1916, were these hubs made with straight sides?

A. I cannot give it to you as an exact date.

Q. Approximately how long?

A. About the first of 1917.

Q. During that period, how many pumps had been sold by the Western Well Works and embody-

(Testimony of D. J. Conant.)

ing this construction of these hubs having straight sides?

A. I cannot answer that question, because I had no connection with the sales of the pumps.

Q. Can you give any estimate? Only a very few—is that correct?

A. I cannot give an estimate as to the number.

Q. When did the Western Well Works begin making this construction having hubs without straight sides?

A. As I stated before, about the first of 1917.

Q. Why was that change made, and what was the change that was made in the formation of these hubs?

A. The change was a slight taper on the end of the hub nearest to the shoulder. That change was made in order to center the tubes and to provide the necessary seat, because the tubes were shorter than the length of the discharge column.

Q. About what period of time was that form of hub made by the Western Well Works?

A. That form of hub is made to the present day.

Q. As I understand, your description of that form of hub, the sides nearest the outer end of the hub are parallel and straight: Is that correct?

A. Yes.

Q. And then a short distance from the seat the taper begins: Is that correct?

A. A matter of approximately  $\frac{3}{4}$  of an inch from the shoulder.

Q. And below the point  $\frac{3}{4}$  of an inch from the

(Testimony of D. J. Conant.)

shoulder to the end of the hub there is no taper: Is that correct?

A. That [649] depends on which end of the combination coupling you are looking at.

Q. Either one.

A. One would have a taper above the point, and the other straight below; it depends upon which end you are speaking of.

Q. In respect to any one hub, as I understand it, the taper begins about three-quarters of an inch from the shoulder or seat: Is that correct?

A. I believe it is on the other model. If you take the lower hub, the shoulder is on the end above; if you take this end, it is below. What one do you refer to?

Q. I am speaking from the end of the hub, whether the end is down below, or above?

A. That hub is straight at the outside end.

Q. And continues straight up to three-quarters of an inch of the seat? A. Yes.

Q. And the taper begins: Is that correct?

A. The taper begins approximately  $\frac{3}{4}$  of an inch from that shoulder.

Q. As I understand it, the sides of the hub from the end to within  $\frac{3}{4}$  of an inch of the seat are straight and parallel? A. Parallel sides; yes.

Q. And then the taper begins, and you have on each hub, then, a taper  $\frac{3}{4}$  of an inch in width: Is that correct? A. At the present time.

Q. And that is true in regard to all of the hubs that have been constructed by the Western Well Works since early in 1917?

(Testimony of D. J. Conant.)

A. To my knowledge, yes.

Q. You have not varied that taper in any respect since that date?

A. Not to my knowledge. The variation might come in the setting of a tool, but that would be the only way.

Q. Do you know anything about the pumps you were supplying [650] to the parties occupying the Selby ranch, down here in San Mateo County?

A. I knew of the pumps at the time they were ordered, and casually saw them go through the shop.

Q. Do you know whether or not the hubs extending from the bearings on those pumps were of standard construction with respect to the taper?

A. Yes.

Q. They were?      A. Yes.

Q. And they are the same as the hubs which you are generally supplying in all your pump constructions, and have been since 1917: Is that correct?

A. Yes.

Q. In regard to leakage, what have you to say in respect to a hub which is tapered and a hub which has parallel sides, so far as preventing any water getting in between any joints formed between them and the tube sections?

A. It depends entirely on those tapers with respect to each other, whether the male and female taper are of the same length and diameter, or whether they are not.

Q. Assuming that the interior diameter of the enclosing casing is slightly less than the diameter of the tapered portion of the hub, and such a sec-

(Testimony of D. J. Conant.)

tion of casing is shoved up on the hub above the taper, under those circumstances what would you have to say in regard to the joint being more water-tight as compared with a joint formed between a straight side hub and such a section of casing?

A. Provided that the diameter of the tube were an easy fit on the straight part of the hub, it would not make a water-tight joint against pressure.

Q. What have you to say with regard to the joint formed with the section of the casing shoved up on the tapered hub?

A. That is what I have reference to, it will be a line contact at best, and because it is shoved up there, it will cut part of the metal and not give a smooth, perfect contact. [651]

Q. In shoving the section of casing up on the tapered hub, would not the section of casing be expanded slightly so as to form an absolutely tight joint between the hub and the tube casing?

A. In some cases it might possibly form a tight joint, but generally it would not, for the reason that the tube does not expand, and that taper fitted the entire length of it.

Q. In some cases, you say a tight joint would be formed by having a tapered casing shoved up?

A. Yes, say to a certain degree; sufficient pressure would cause it to leak. It is not a commercially water-tight joint. If I were to build a joint to make it water-tight, I would not use that system.

Q. Why do you use white lead in these joints on your construction?

(Testimony of D. J. Conant.)

A. White lead is used on that joint to prevent corrosion.

Q. Does it have any effect to prevent leakage?

A. Not that I know of, because the white lead is sufficiently fluid to be put on with a paint brush. It is not a sticky preparation with enough hardness; it will flow with water; pressure will force water through it.

Q. Have you ever substituted your pump construction for other pump constructions in which the shaft-bearings were not protected from the water in the well?

Mr. TOWNSEND.—That is objected to as not proper cross-examination.

The COURT.—The objection is overruled.

A. The only substitutions I know of were substitutions of the discharge column in place of the discharge column manufactured by other parties. I cannot say whether those bearings in the former construction were protected from the water, or not, if that is your question. [652]

Mr. WHITE.—Q. Have you ever had any experience with pumps used in San Mateo County and in Santa Clara County, where you have been selling your pumps, and in which other pumps the line-shaft bearings were not protected from water and sand in the well?

A. Not with deep well turbine pumps.

Q. What is the effect of water and sand on the bearings, where the bearings are not protected?

A. The effect of water and sand on bearings which are not protected is to cut them, increase the

(Testimony of D. J. Conant.)

bore through the wearing, and decrease the diameter of the shaft and cause rough surface.

Q. Did you ever hear of a deep well pump being operated under those conditions, and with the line shaft-bearings unprotected and as the result of an operation of about three hours the bearings were entirely destroyed?

A. I have seen a pump in which the bearings were destroyed by the action of sand and water.

Q. Within a short space of time, such as two or three hours?

A. Within a short space of time.

Q. What was the time?

A. I could not tell, because I simply saw the pump on top of the ground.

Q. Where was that?

A. That was on Santa Cruz Avenue, in San Mateo County—Menlo Park.

Q. And that is the district where you are selling a great many of your present constructed pumps?

A. We have one pump in that territory that I know of; there are others near it.

Q. About what length of time did that pump operate with the bearings unprotected, or the bearings worn out?

A. With regard to protection, I could not say; I don't know what the original installation was. I saw the bearings after they were worn.

Q. There are other means of protecting a bearing than enclosing it in a shaft, are there not?

A. Yes, there are other means [653] for protecting a bearing.



(Testimony of D. J. Conant.)

Q. Did you understand that from these bearings that they had not been protected from sand and water in the well, and, therefore, they were worn out?

A. There was an attempt to correct them.

Q. That attempt had failed and the bearings wore out?

A. As I understood the circumstances there, there were protective devices put on the ends of the bearings, but they were inadequate, and, possibly due to sand or something else, they started to wear, and the sand action finished the cutting.

Q. In other words, when the protecting means failed to accomplish the purpose for which they were installed in this construction, and did not protect the bearings from the water and the sand in the well, the bearings rapidly wore out and the structure became inoperative: Is that correct?

A. In that particular pump other influences than that caused the downfall of the pump.

Q. The pump would become inoperative if the bearings wore out; that is correct, isn't it?

A. The pump would not become inoperative; it would not operate as it was originally designed to. A shaft will turn in that length without bearings, it will rotate.

Q. It will rotate, but would not the structure be pounded to pieces in a very short time?

A. As far as I know, the pump supplied water until it was removed from the well.

Q. How long was that?

A. As I understand it, it was a matter of a few

(Testimony of D. J. Conant.)

hours. The pump was removed from the well when it stopped supplying water.

Q. Do you know anything about the installation of your pump, that is, do you go out in the fields where the pumps are installed?

A. I personally installed pumps; I watched others [654] being installed, and I have given instructions to install pumps.

Q. What is the practice of your company when installing pumps in regard to packing grease and oil in the shaft-enclosing casing? Just describe how the shaft-enclosing casing sections and the water discharge sections are combined when the pump is about to be put down into the well?

A. Starting in with the model as shown there, do you mean?

Q. Yes; I mean in respect to the use of grease and oil.

A. You start with Section 9b, assuming that the adapter bearing, 17, which corresponds to the size of the discharge column, has been placed on the pump bowl, 4; the runner shaft extends a matter of approximately 5 inches above the top of the bearing in the casting, 17. By means of a hoist, the combination as usually put on is raised and connected together by a rope sling. That combination consists of a discharge column, 9b, the tube, 8, and the section of shaft; on the discharge, 9b, is bearing, 17a; as it is arranged, the discharge column is placed with the combination coupling on the top. The tube extends through a matter of 8 or 10 inches, the shaft extends through below that; that is lower

(Testimony of D. J. Conant.)

down; the shaft is allowed to come through and is screwed into that coupling and tightened up with wrenches. Then while the discharge casing, 9b, with its combination coupling, is hanging and the tube attached to that, there is graphic grease placed around the top of that bearing; it is taken with a stick and just swabbed on there, probably as much as would extend over my fingers. Then on top of that is taken half a handful of cup grease and it is squeezed on there. The tube is released from the rope sling, slid over the hub on bearing 17, and the discharge column raised up so that it clears the end of the tube; a can of oil is raised [655] and a small amount poured in that tube. Then the discharge column and its coupling, 17a, is lowered down over this. The threads to this connection have been covered with graphic grease. The man on the derrick directs the combination coupling so that it will slide over the shaft, the assemblage is lowered, chain tongs gripping the casting, 17, and another pair of chain tongs around 9b, and this casing is screwed together. That leaves the casing just as it was before, you have a shafting extending above and you have a combination coupling on that. The next process is exactly like that.

Q. When these couplings are turned to bring the water discharge sections together, at the same time that you are pressing the shaft-enclosing casing section at each end and upon one of these hubs: Is that correct?

A. It depends entirely upon the fit. Sometimes when you place this tube over the end of the hub,

(Testimony of D. J. Conant.)

it will slide to a seat by hand, just of its own weight. In that case there is no pressure necessary to seat it.

Q. You have a taper of  $\frac{3}{4}$  of an inch on each of those hubs?

A. A taper  $\frac{3}{4}$  of an inch in length.

Q. On each one of those hubs? A. Yes.

Q. And between which you place the shaft-enclosing section of casing: Is that correct?

A. I think you have the hub outside the casing.

Q. Of course, the shaft-enclosing casing embraces the hubs, these two hubs? A. Yes.

Q. And you have  $\frac{3}{4}$  of an inch taper on each hub? A. It tapers  $\frac{3}{4}$  of an inch in length.

Q. You mean vertically?

A. I mean the length of the hub.

Q. And that shaft-enclosing casing is  $\frac{1}{32}$ d of an inch only shorter than one of these sections of water-discharge casing: [656] Is that correct?

A. That is correct.

Q. So that when the water-discharge section is brought to its seat the shaft-enclosing tubing section necessarily is pressed up on the tapered portion of each hub: Is that correct?

A. It will have ridden up close to the seat, but not necessarily on the taper, because that taper, as I have said, is  $\frac{3}{4}$  of an inch long. We never let a tube go out which will not pass down  $\frac{3}{8}$ ths of an inch of shoulder, which means that it has gone half way up on that taper. If they are tighter than that, they must go back and be re-reamed. It must go halfway the length of the taper without any obstruction at all, without any resistance. The rest

(Testimony of D. J. Conant.)

of that taper is a matter of the particular fit that that tube may come. Taking a reamer, which makes the ends of the tube, finishes them on the inside, those tubes vary in thickness, they run the reamer over it—the reamer is the thing that is gaged; the reamer may go in there and make a variation of 5/1000ths or 10/1000ths, because it will spread after the cut has been taken. So the tubes do not fit exactly alike for that reason; one goes down a certain distance, and one goes down not quite so far, although they are manufactured by the same tools.

Q. But the average fit between the tubes and these taper hubs is certainly very much improved by reason of the fact that the hub is not tapered and has not parallel sides?

A. There is no question at all but what there might be a slight variation.

Mr. LYON.—I move to strike out that answer, your Honor, as not responsive to the question.

The COURT.—Yes, let it be stricken out.

Mr. WHITE.—I may say to your Honor right now that if, when this case is closed, your Honor has any doubt whatever [657] about the facts of these joints, and so forth, we will ask your Honor to go into the field and examine some of the pumps in actual operation.

Mr. TOWNSEND.—We join in the invitation, your Honor, we will take you to the plant.

Mr. WHITE.—We don't want to go to the plant, we want to see the pumps in actual operation, if it comes to that.

(Testimony of D. J. Conant.)

Q. Now, will you answer my last question?

A. I cannot say that that improves the fit.

Q. In your opinion, it does not improve the fit, even though the tube has to be forced up on the taper: Is that correct?

A. It is a matter of what constitutes improvement on that fit.

The COURT.—Do you mean it tightens the fit?

Mr. WHITE.—Makes it a closer joint.

A. If I may cite an instance to your Honor—

The COURT.—No, just state generally whether it does or does not, or you may answer that you don't know, if that is the fact.

A. It makes a closer fit on the hub.

Mr. WHITE.—Q. You have written directions which your company gives the employees down there in respect to the manufacture of these hubs, and the diameters of the hubs, and the inner diameters of these hubs when they are being reamed out?

A. We have not written instructions; we have blue-prints specifying the dimensions, and from the blue-prints gages have been made, and all of the settings in manufacturing any of those parts are taken from the gages, not from the blue-prints.

Q. Could you produce a blue-print showing all of those measurements in regard to the hub construction and the tube construction?

Mr. TOWNSEND.—Isn't that inquiring into their shop practice, [658] your Honor? It is not pertinent to the present issues.

(Testimony of D. J. Conant.)

The COURT.—You have gone into that subject, haven't you?

Mr. TOWNSEND.—It is simply a question of whether there are any trade secrets involved. Of course, I want the Court to know all the facts in regard to the matter.

The COURT.—I cannot hardly see how that is a trade secret; however, if you contend that it is, I will hear you.

Mr. TOWNSEND.—I will inquire into the matter, your Honor. The objection is withdrawn. You may explain it.

Mr. WHITE.—Q. Have you a blue-print there which shows the exact measurements?

A. The blue-print which I have shows the adapter casting, 17, which is shown here, and which has one of these hubs. All of them are the same.

Q. Can you give the dimensions of the hub, showing what the amount of taper is?

A. I can present the blue-print which will give it direct.

Q. In constructing your pumps, is the inside of the shaft-enclosing casing sections reamed at the respective ends thereof? A. Yes.

Q. What is that done for?

A. That is done because the tube that is used is standard pipe, which is not circular, and varies considerably in diameter, both inside and out.

Q. So that by the reaming operation you insure the inner surface of the end of the tube being absolutely uniform?

A. No, sir, because that is wrought iron, and it

(Testimony of D. J. Conant.)

ters in machining, and you do not get a smooth surface when you ream one of these with a single cut.

Q. But reaming improves the inner surface with regard to smoothness, etc.? A. Naturally.

Q. So that you do get the benefit of smoothness, etc., as far as possible, by this reaming operation: Is that correct? [659]

A. There is no attempt to get a particularly smooth surface; otherwise, we would take a couple of cuts. The attempt is to get some uniformity in the diameter of that bore.

Q. What is the object of having a uniform diameter?

A. The attempt in the entire pump is to produce interchangeable parts. If you have a variation of as much as 1/16th of an inch in the diameter of a tube, it either will go on or it won't; it is too large a variation for any manufacturing product.

Q. You mean if the inner diameter of one of those tubes varies 1/16th of an inch it might go on the tube or might not go on the tube? A. Yes.

Q. Couldn't you take care of that variation very easily by having your hub tapered to a greater extent?

A. No, sir, because if they are tapered to a greater extent than it was put on there, it would split, which has been occasioned with the taper we have already tried at different times.

Q. Why do you have any taper at all, then?

A. We have cut that taper down to the minimum which will insure keeping the tube from rattling.



(Testimony of D. J. Conant.)

Q. Oh, the noise is what you are trying to eliminate, then, by this tight fit: Is that correct?

A. There is no need of putting a tube on there at all, unless you keep it somewhere near position.

Q. On account of this noise?     A. No, sir.

Q. Why does this rattle bother you?

A. The rattle is caused by vibration. Vibration will break bearings out of the hub if it comes from the shaft, or the tube, or anything else in connection with a highly rotating speed shaft.

Q. As I understand it, the vibration would be caused by the shaft: Is that correct?

A. Vibration originates with the [660] shaft; anything around it that is loose will vibrate with it.

Q. Assume that the shaft and the bearings of the shaft are on alignment, and the shaft is operating efficiently, how would any vibration be caused in the whole structure by one of those tubes rattling slightly?

A. As far as I know, it is not physically possible to get a shaft of the length of the commercial product which will not vibrate at that speed.

Q. What I want to get at is this: Do you mean to say that if one of those tubular sections rattled a bit, that that would cause a vibration in the whole structure, and affect the operation of the shaft?

A. If the tube would rattle, its own action would enlarge that to such an extent that it would have to be taken out.

Q. Assuming, now, that the shaft is not vibrating.

A. I don't know of a pump where the shaft will be perfectly quiet.

(Testimony of D. J. Conant.)

Q. Now, we will assume that the tube rattles a bit: That would indicate that the joint between the tube and one of these hubs was not a very tight joint: Is that correct?

A. That is correct.

Q. And you say that under those circumstances you would have to take the tube out?

A. Yes, in time.

Q. Why? A. Because that looseness increases.

Q. Why?

A. If you take any piece of metal and keep pounding it you will have to do that.

Q. Why would you have to take it out—what difference would it make whether it was loose, or not? You don't take it out because of the noise it makes, do you? Why do you take it out if it rattles?

A. Your entire tube line is supporting the individual sections. The supports for the bearings are on webs. If you get something that is of the weight of the tube and it will bounce around and rattle in there, it has the possibility of breaking that bearing, and entirely breaking [661] the webs.

Q. Why don't you eliminate this tube entirely? What is the use of it there anyway?

A. The tube is used for other purposes than to make a tight joint.

Q. What is it used for?

A. The tube is used to conduct oil between the bearings; it is used to surround the shaft; it makes a more perfect passage for the water; if you have a bearing that sticks out in a bunch, the water has

(Testimony of D. J. Conant.)

to pass around that and then come into a small shaft and enlarge again, reducing the efficiency. Every enlargement and enclosure will reduce the efficiency of your pump.

Q. What other purpose does the tube serve?

A. I have mentioned two.

Q. Any more?

A. It will prevent the scouring action of the sand carried with the water.

Q. Protect the bearings from the action of the water in the discharge column?

A. It will prevent the bearings against the action of the sand that is carried by the water in the discharge column.

Q. And, of course, that is a detrimental effect that the water has on the bearing?

A. It has other detrimental effects. The rust action on the shaft will cause corrosive action, as will sand.

Q. The hub that is disclosed in this blue-print which you handed me a few minutes ago has parallel sides, has it not?

A. Yes. Do you notice the date on that print?

Q. Yes, this is in 1916? A. Yes.

Q. But my question was, did you have any blue-prints showing the tapered hubs, and the amount of the taper?

A. Did you ask in regard to the taper? [662]

Q. Yes.

A. I thought you asked about the dimensions of the hub.

(Testimony of D. J. Conant.)

Q. No, I asked with regard to the amount of the taper.

A. I didn't know that you wanted the exact dimensions. I have not a blue-print with me showing that.

Q. Do you know whether any other parties here connected with the company might have such blue-print? A. I can't tell.

Q. Can you endeavor during the noon hour to produce such a blue-print showing the exact dimensions of the tapered hubs, illustrating the amount of the tapering, and where the tapering begins?

A. The only positive location of blue-prints that I know of in the office. I could not get those during the noon hour.

Q. You could produce such a blue-print to-morrow morning? A. Yes.

Mr. WHITE.—I will ask that such a blue-print be produced. That is all, your Honor, subject to the production of the blue-prints.

Mr. LYON.—I will state, your Honor, that in connection with this coupling which was offered for identification as Defendant's Exhibit "C," we are willing to stipulate that the hubs on that are substantially machined in accordance with the present practice of the defendant as shown in their pump structures, providing that it is a matter of record what those measurements are. I suggest that counsel have our measurements checked. We find, as a matter of fact—and this is what I want counsel to see if he finds also—that the taper is from the extreme end clear to the base, and that there is a difference of

(Testimony of D. J. Conant.)

58/1000ths in the diameter at the base, or where the hub joins the two areas of the casting, from the diameter at its outer edge.

Mr. TOWNSEND.—We will have our gages here this afternoon, [663] and then we will make the measurements and have them appear in the record. In view of plaintiff's suggested stipulation, I will ask that this be marked "Defendant's Exhibit 'C.' "

Mr. LYON.—I want you to make your measurements and put them in with the stipulation; it all can come in at one time.

Redirect Examination.

Mr. TOWNSEND.—Q. Counsel on cross-examination interrogated you in regard to a pump near San Mateo, I believe, which met with difficulty and was taken out. Do you know what that pump was, whose structure it was?

A. It had the name of P. K. Woods.

Q. Do you know what the cause of its being removed was and ceasing operations suddenly?

A. The reason for its taking out I simply have from hearsay, and from looking at the parts. I was told it was taken out because the shaft broke and that—

Mr. WHITE.—Just a minute. That is objected to, your Honor. He stated that the bearings were worn out, and he has given his testimony as to the effect of that. This is just hearsay.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—Q. Did you see the broken shaft? A. No, sir.

Q. You described, on cross-examination, the

(Testimony of D. J. Conant.)

method of installation in the use of grease and some oil; what is the purpose of that grease?

A. The grease is put there in order to wear in the bearings. Our bearings are cast iron. The grease is put there, particularly the graphite grease, to form a film on the bearing which will prevent further action of the shaft on the bearing. This grease is only put in there for a temporary purpose; the fact that oil is fed from the surface by means of a drip cut—for instance, if you had a 100 or a 150-foot pump, or more, you have several bearings in there; the oil going to the first bearing would take care of that, but by the time the oil got to the bottom bearing, if there was [664] no provision for grease at each bearing, they might be scoured or burned before the oil ever reached there. By providing grease, it does not run out while the pump is being assembled, the grease remains and passes through the bearing when the pump is started up.

Q. What becomes of the grease, if you know, after the pump is started up?

Mr. WHITE.—That is objected to upon the ground that no proper foundation is laid.

Mr. TOWNSEND.—You cross-examined him on that; I want to know if he knows what becomes of it.

The COURT.—You may answer that question “yes” or “no.” A. Yes, sir.

Mr. TOWNSEND.—Q. What does become of it?

Mr. WHITE.—I object to the question unless the witness tells how he knows it.

The COURT.—You may examine him on that, if

(Testimony of D. J. Conant.)

you may desire, you may examine him as to his competency.

Mr. WHITE.—Q. Did you ever see a pump, after it was in operation for a couple of years, disassembled?     A. Yes.

Q. Did you ever notice at that time that this grease that was put in there originally still covered the tubes in large quantities, in each one of these tubular sections?

A. I have seen grease on the shaft, and I have seen grease in the tube.

Q. After two or three years' use of the pump?

A. Yes.

Q. That is what becomes of the grease—it stays there: Is that correct?

A. That is what becomes of a portion of the grease.

Mr. TOWNSEND.—Q. Do you know what becomes of the rest of it?     A. Yes.

Q. What?

A. The grease which passes through the bearings [665] and which lubricates the bearings, for which purpose it is put there, passes out the drain tubes.

Q. You spoke of the shaft that carries the impeller rotating at high speed: Do you know the average speed of rotation?

A. Approximately 1150 revolutions per minute.

Q. What is the length of the tube sections employed in the Western Well Works pump?

A. A 1/32d of an inch short of 6 feet 4 inches.

Q. What is the average weight of a tube of that sort, of 3 inches in diameter—the approximate weight?

(Testimony of D. J. Conant.)

A. A 3-inch tube would weigh approximately 20 pounds.

Q. Will a Western Well Works pump operate with the tube sections removed? A. Yes.

Mr. TOWNSEND.—That is all of this witness now, your Honor, subject to recalling him to verify the measurements we have mentioned.

Recross-examination.

Mr. WHITE.—Q. Will one of these pumps of the Western Well Works operate without the shaft-enclosing tube for any length of time in the type of wells in which you are putting pumps down in Santa Clara and San Mateo counties? A. Yes.

Q. Did you ever install one of your pumps without any shaft-enclosing tubing?

A. No, sir, not to my knowledge.

Q. But, in your opinion, your device would operate successfully and be an efficient device without this shaft-enclosing tubing in there: Is that correct?

A. Yes, it could so operate.

Q. And efficiently? A. Yes.

Q. And according to good engineering practice?

A. Yes.

Q. And you think that under those circumstances you could recommend it to any one of the farmers down in San Mateo County, or [666] Santa Clara County, as a good pump: Is that a good pump?

A. Yes.

Q. What does it cost to put in these tubes in one of your pump construction, one of the shaft-enclosing tubes?



(Testimony of D. J. Conant.)

A. I cannot tell you, because I have not the cost figures.

Q. What is your estimate of that cost?

A. I have nothing directly to base it on.

Q. Have you any idea of the cost of reaming these hubs or tapering these hubs, machining them—in one of your pump construction?

A. That operation is combined with threading and facing.

Q. What is the cost of it?

A. It adds nothing except the cost of sharpening tools at times for the threading of the ends of the hubs and the facing of them.

Q. What does it cost to ream out the interior ends of the tubes?

A. Probably a matter of 10 cents an end.

Q. What were the means in the Woods pump for protecting the bearings from the action of the water and the sand?

A. Those parts had been broken off the pump at the time I saw it; it had been removed from the well.

Q. But there had been some attempt in the Woods pump to protect the bearings from the action of the water, and the grit, etc.?

A. As secondly installed.

Q. Do you know the cost per foot of this tubing that you use in your construction?

A. I could not tell you at this date, because it has varied a good deal on the market in the past year or two years.

Q. Well, approximately, you could give us the cost, couldn't you?      A. No, sir.

(Testimony of D. J. Conant.)

The COURT.—We will be in recess until two o'clock.

(A recess was here taken until two o'clock P. M.)  
[667]

### AFTERNOON SESSION.

#### **Testimony of D. J. Conant, for Defendants (Recalled).**

D. J. CONANT, recalled.

Mr. TOWNSEND.—Q. When we adjourned, I had asked you a question in regard to the weight of tube sections employed by you, referring to the 3-inch tubing. Will you tell us the approximate weight of a section of  $2\frac{1}{2}$  inch tubing and  $3\frac{1}{2}$  inch tubing?

A.  $2\frac{1}{2}$  inch tubing will weigh approximately 6 pounds to the foot.

Q. What size tubing is that?

A. Two and one-half inch tubing will weigh approximately 6 pounds to the foot.

Q. Three inch tubing will weigh approximately what?

A. It weighs about 8 pounds to the foot.

Q. Three and one-half inch tubing will weigh approximately what?

A. Between 9 and 10 pounds to the foot.

Q. I understood you to say this morning that your sections weigh approximately 20 pounds.

A. For a section.

Q. Of 3 inch tubing. Do you want your answer corrected with regard to that?

A. That is not correct for a 3 inch tubing.

(Testimony of D. J. Conant.)

Q. That is approximately correct for a tubing of smaller size?     A. Yes.

Q. Now, you stated just before closing that the Western Well Works pump was a practical pump with the tube sections removed. Will you state your reasons for that answer?

A. My reasons for stating that the pump was a practical pump with the tubes removed are because it will function with the tubes removed; the bearings which are a part of the combination coupling will support the shaft, give it proper alignment, hold it in place, and the pump will function with the tubing off. However, the pump will not have as long a life under [668] certain conditions of wells without the tubing as it will with them. There are pumps built without tubes, and they are practical pumps. Some wells produce a lot of sand, some produce practically none. Water, itself, will not make a pump impracticable or practicable. It is a question of the action of the stuff that is carried in the water that the tube will keep out.

Q. Referring to the structure of the Layne model, or of the Layne patent in suit, which is Defendant's Exhibit "B," what would you say as to the practicability of such a structure with the tube section which surrounded the shaft removed?

A. The pump would not function with the tube section removed.

Q. What would result by the removal of the sections which are marked 20 in the model Exhibit "B" if they are removed?

A. It would take away the support for the bearings, and the support for the weight of the pump.

(Testimony of D. J. Conant.)

Q. What would happen to the shaft?

A. There would be no means of keeping the shaft in alignment.

Q. Would there be any means of supporting the shaft?

A. No, because you take away the support for the bearings.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. WHITE.—Q. In this model of the defendant's device, are the hubs tapered, or do these hubs have parallel sides?

A. The model shows, to the best of my knowledge, that they have sides which are parallel at the start, and taper as they approach the hub, but that would be parallel sides for a matter of approximately  $1\frac{1}{8}$  inches, and then tapering from then on.

Q. Do you know what the fact is in that regard?

A. I have never checked up on that feature, because those were made on [669] the forming tools that the rest of the pumps are made with.

Q. Is it not a fact that at the beginning those hubs were made by the Defendant with parallel sides, that thereafter those hubs were made with parallel sides, and then a taper beginning about  $\frac{3}{4}$  of an inch from the seat, and that now those hubs are made with the tapering beginning at the extreme end of the hub and extending up to the seat?

A. The first two parts of that statement are correct. I don't know the correctness of the last one.

Q. You are the chief engineer of the company?

A. Yes.

(Testimony of D. J. Conant.)

Q. If that last change had been made, would it have been made under your direction?

A. I would have known it had it been made.

Q. And, not knowing of it, I presume you state that that change has not been made: Is that correct?

A. To my knowledge it has not been made.

Q. You would not deny the fact it has been made, though, would you?

A. I could not, without knowing.

Q. In other words, you would not deny the fact that this hub in Defendant's Exhibit "C" is tapered from the extreme end of the hub to the seat?

A. I would have to measure it in order to know whether it was, or not.

Q. By tapering the hub throughout its length, from the seat to the outer edge, would you or would you not get a tighter joint, and insure a tighter joint between the two sections and such hub when the tube section is forced up on the hub?

A. That is a matter of the diameter of the bottom of the hub and the inside diameter of the reamed tube.

Q. Assuming that the interior diameter of the tube section is slightly less than the exterior diameter of the hub, say a quarter or an inch from the end of the hub, and that the tapering [670] continues from that point on up, would you get a tighter fit by such tapering, than where the hub is only tapered  $\frac{3}{4}$  of an inch from the seat?

A. You would have the same condition in both cases.

Q. In other words, a tapered hub from one end to the other would have no different effect on the tightness of the joint than a hub which was tapered only

(Testimony of D. J. Conant.)

$\frac{3}{4}$  of an inch from the seat?

A. No, since the tube does not ride on that taper in every case until it gets within a quarter of an inch of the shoulder.

Q. In other words, in actual construction, you know it is an actual fact that the tube section does not ride on the taper until it gets within a quarter of an inch of the seat?

A. I made the statement this morning that  $\frac{3}{8}$  of an inch was our outside limit; if they ride on the seat before they came  $\frac{3}{8}$  of an inch they were too small.

Q. Are you willing to state that in your construction the tube section does not ride on the taper until the end of the tube gets within  $\frac{3}{8}$  of an inch of the seat?

A. It is not the common occurrence. You might find an isolated case where you would get a certain tube section that would do that, but that is not common.

Q. How do you know that, when you are not able to give the dimensions of this seat, the dimensions of the hub, and the dimensions of the interior diameter of your tube?

A. For the reasons that the tubes are made on certain tools which are only changed as a matter of five or six weeks' operation—there may be a couple of three hundred tubes made without a change in those tools. The same thing applies to hubs; and the only means I have of detecting them is not with gages in which we measure in thousandths of an inch, but by [671] seeing, placing new tubes over the hubs, how far down they will go.

(Testimony of D. J. Conant.)

Q. Is it not a fact that in the construction of the defendant the tube begins to ride, bear on the tapered hub halfway up the hub, that is, at a point halfway between the seat and the end of the hub?

A. I cannot recall a case where I have seen that.

Q. Isn't that true in all the cases in regard to your construction? A. What do you refer to?

Q. That such a contact takes place halfway between the end of the seat and the hub? A. No.

Q. Isn't that a fact with respect to the pump supplied to the party running the Selby ranch at San Mateo county, that is, that such a contacting takes place between the tube and the hub halfway between the end of the hub and the seat?

A. I cannot answer that question; first of all, I don't know the man's name that runs the Selby ranch, because we have not dealt with it as the Selby ranch; we dealt with it under the man's name, and I don't know who runs the ranch.

Q. Do you know a man by the name of Sherrer?

A. Yes.

Q. Do you know the pump that was supplied Mr. Sherrer?

A. As I recall, three pumps Mr. Sherrer had. The exact conditions on those pumps I could not say.

Q. You are not prepared, then, to say that in those pumps this contacting did not take place halfway between the end of the hub and the seat on the hub?

A. I cannot say positively what happened in that individual pump. What I was referring to are the tests which I make occasionally in going over the

(Testimony of D. J. Conant.)

product going out of the shop; not the parts which enter into a specific pump. [672]

Q. Did you telephone Mr. Sherrer yesterday noon in regard to plaintiff's counsel and their representatives going to his place and examining that pump that your company supplied him?

A. I have not talked with Mr. Sherrer nor seen Mr. Sherrer for probably a matter of probably six weeks.

Q. Were you present yesterday when anyone in your office telephoned to Mr. Sherrer? A. I was.

Q. Protesting against any such examination?

A. I was not.

Q. You don't know anything about that, then?

A. No.

Q. Do you know anything about the pump which was supplied to Mr. Sherrer, located at Palo Alto—supplied to him within the last six weeks?

A. I don't recall a new installation for Mr. Sherrer within the last six weeks.

Q. You are not prepared, then, to deny that in a pump construction supplied to Mr. Sherrer within the last two months a contacting took place between the end of the tube and the mid-section of the hub, when the tube is shoved up onto the hub: That is correct?

A. I can't say exactly what happens. It is possible in taking these tubes, there are so many tubes sent out, and so many hubs, that you could in an instance or two get that. The entire run of the hubs would not be that way.

Mr. WHITE.—That is all.



(Testimony of D. J. Conant.)

Redirect Examination.

Mr. TOWNSEND.—In regard to these Sherrer pumps just referred to, are those supplied with drain tubes at the bottom?

A. All of our pumps are supplied with drain tubes at the bottom. In this case, that is referred to particularly as No. 17.

Q. What effect, if any, would the contacting of the end of the tube section with a tapered hub have with respect to the entry of water from the column?

A. It would simply determine the [673] quantity of water that could go through.

Q. Is there any difference in principle whether the tapering extends for a greater or less length on the hub?

A. No, since it is a straight bore and the tube fits over it, and the tube would ride the taper at the same point.

Q. Does the tapering of the hub have any advantage in the matter of assembly of the pump?

A. Yes.

Q. In what way?

A. The tube and the hub are not uniform in size. They are a matter of a few thousandths of an inch one way or the other. By means of this taper, you can more readily center the tube than if it were straight and had this same variation in size.

Mr. TOWNSEND.—That is all for the time being. Our gages have not come yet.

Mr. LYON.—We have Mr. Anderson in the room in attendance, and, if it please the Court, we would

(Testimony of C. C. Anderson.)

like to interrupt with him. He is the witness we reserved.

Mr. TOWNSEND.—We have not finished our case.

Mr. LYON.—We understand that. This is Mr. Anderson, whose testimony we reserved.

**Testimony of C. C. Anderson, for Plaintiff.**

C. C. ANDERSON, called for the plaintiff, sworn.

Mr. LYON.—Q. Where do you reside, Mr. Anderson?

A. At Linden, near Linden, on the Anderson-Baingrover ranch.

Q. That is near Stockton, is it? A. Yes.

Q. On that ranch, have you any Western Well Works pumps? A. Yes.

Q. And you have one of the Layne & Bowler Corporation pumps, have you? A. Yes.

Q. For what was that Layne & Bowler pump substituted?

A. For a [674] Western Well Works pump.

Q. Do you know of the substitution?

A. Yes.

Q. How long had that Western Well Works pump been used in that well prior to the substitution therefor of the Layne pump?

A. Why, about two seasons—a little over two seasons.

Q. What was its condition at the time that it was withdrawn from the well and said substitution made, as regards its position when it was inserted in the well?

(Testimony of C. C. Anderson.)

A. Well, so far as I was able to observe, it was in pretty much the same shape.

Q. Had there been any changes of any kind made in it during that time?

A. None other than the Western Well Works' employees made in it.

Q. They themselves, had entire charge of the pump during that time, had they?

A. Yes; all work was done by them.

Q. I will ask you to step down here and look at Plaintiff's Exhibit 4, and I will ask you if you can identify it. A. I think that is the pump.

Q. The one that the Layne & Bowler Company took out of the Anderson-Barngrover well, to which we have referred?

A. To the best of my knowledge it is the same construction.

Mr. LYON.—That is all; you may cross-examine.

Cross-examination.

Mr. TOWNSEND.—Q. What representations did Layne & Bowler make to you when they wanted to make this substitution?

A. Why, not anything that I recall now; it was not sold to me direct; it was sold by the firm in San Jose.

Q. I mean when the Layne & Bowler Company took out the Western Well Works pump and put in the Layne & Bowler pump, do you know what representations were made as to the substitution, or the reason for it?

A. No, I do not. The rumors were,— [675]  
nobody made any such statement to me—that they

(Testimony of C. C. Anderson.)

intended to bring suit, but personally nobody made any representation to me.

Q. The negotiations were all carried on in San Jose?      A. Yes.

Mr. TOWNSEND.—That is all.

**Testimony of N. T. Bradford, for Defendant.**

N. T. BRADFORD, called for the defendant, sworn.

Mr. TOWNSEND.—What is your occupation, Mr. Bradford?

A. Selling agent for the Western Well Works, Inc.

Q. What territory do you cover?

A. San Joaquin Valley.

Q. With headquarters where?

A. Terra Bella.

Q. Near what large city is that?

A. About half way between Fresno and Bakersfield.

Q. How long have you been with the Western Well Works, Inc.?

A. Since the early part of 1916.

Q. In the same capacity?      A. Yes.

Q. Are you familiar with the construction of pumps sold by the Western Well Works, and here-in claimed to be infringements?      A. I believe so.

Q. You say you believe so. Will you explain a little more fully why you believe so.

A. I am familiar with the product since they built their first pumps, and have been receiving

(Testimony of N. T. Bradford.)

pumps ever since, and would have noted any change in construction.

Q. Do you do any installation work?

A. A good part of it, yes.

Q. How many pumps of the Western Well Works came under your observation during your connection with them, approximately?

A. Something over 100.

Q. Regarding the installation, have you participated in any considerable number?

A. I have been on the job, I think, on every installation but perhaps ten. [676]

Q. Will you describe the method of installation that has been commonly employed with Western Well Works pumps, and I will call your attention to the model which is here in evidence as Defendant's Exhibit "V"?

A. The suction pipe is installed in the well first, by means of a derrick, and winch, a cable and block; the bowls the then connected to the suction pipe and lowered down to the top of the well casing. A section of discharge column, tubing and shafting, tied together by means of a rope, and raised by a pair of elevators is suspended over the bowls, and the shaft untied and screwed into the tube coupling; a small amount of graphite grease is placed directly above the shaft bearings, and a handful, I would say, of Arctic cup grease is placed above that; the seat for the tubing is covered with white lead; the tubing is put into position, the pipe is lowered in place.

Q. When you speak of the tubes being put in

(Testimony of N. T. Bradford.)

position, will you explain that more fully?

A. The rope is untied that has been holding the tube up, and the tube is lowered down over the hub.

Q. You are referring to a tube section being lowered over the hub, with a combination coupling?

A. Yes. That operation is performed for as many joints of the pump as there are. At the top the head is inserted.

Q. In placing the tube sections in position over the hubs, what care, if any, do you exercise?

A. In so much as the tubing varies in size, the installers sometimes become careless and drop a tube, or when they slide out of the rope sling let them fall; certain tubes that will do no damage, they will tighten up on the hub before reaching the shoulder; other tubes, being looser, go clear to the shoulder, and with the strain of a [677] certain pump hanging on the combination coupling, I have had couplings broken by the jar of the tube falling.

Q. You spoke concerning white lead around the joints formed between the end of the tubing where it slipped over the hub. What is the object of that white lead?

A. It prevents the tube casing member from corroding with the hub member.

Q. Are you familiar with the operation of this pump after it is suspended in the well?

A. I am.

Q. Will you describe its operation, and describe it from the time you have assembled it as a new pump?

(Testimony of N. T. Bradford.)

A. At the time the pump is started, we have grease at all the bearings as they are installed; nevertheless, for the first day or two we run in what would be an excessive quantity of oil to properly work in the bearings, later cutting that down to perhaps 10 ounces in twelve hours or twenty-four hours. Just what do you mean by the operation?

Q. I mean the operation of the pump when the shaft starts rotating for pumping purposes. What action takes place, if any, inside the tube sections, and what action, if any, takes place outside?

A. When the pump is started, the shaft driving the impeller raises the water to the surface; the shafting running through the bearings, with this spiral groove, forces the lubricant down through the pump, supplying all the bearings with lubricant, and there it is expelled at the drain tubes at the bottom.

Q. Where is that lubricant expelled as it passes out the drain tube? A. Into the well proper.

Q. Outside?

A. Outside of the pump assembly.

Q. Outside of the casing? A. Yes.

Q. What method or sort of lubrication is employed after the pump is started in operation?

A. We use a vegetable emulsifying [678] oil.

Q. How is that applied, and how does it act?

A. That is applied with a sight feed, gravity drop oil cup, feeding at some point or points inside of the tube line, with the drip or moisture that is forced around the ends of the tubes, and runs out at the drain tubes in a white or emulsified form.

Q. Have you ever had opportunity to observe

(Testimony of N. T. Bradford.)

the discharge from the drain pipes?

A. Only on one occasion.

Q. Describe the circumstances.

A. This pump was installed in a pit, and it was possible, by going down the pit, to observe the lubricant running from the drain pipe, with about ten feet of lamp cord below the bottom of the pit.

Q. That would be a case, I suppose, where the drain pipes were exposed above the surface of the water in the well?

A. The water is below the bowls of the pump.

Q. You say that was an installation in a pit?

A. Over a pit. There was a pit where this pump is now installed.

Q. What was the condition of the discharge from these drain tubes as you saw it there?

A. In what way?

Q. What was the nature of the discharge?

A. The tubes were dripping a small quantity of white fluid, probably at the rate of one or two gallons a minute.

Q. I understand you that was the emulsion of the water and emulsified oil that was admitted at the top?

Mr. LYON.—We object to that as leading and suggestive.

The COURT.—Yes.

Mr. TOWNSEND.—I was only summarizing.

A. I could not answer that, because I did not collect any of this fluid.

Q. You spoke of the heavier grease being discharged after the pump [679] started in opera-



(Testimony of N. T. Bradford.)

tion. Have you ever seen any evidence of such a discharge as that? A. I have.

Q. When, and where, and under what circumstances?

A. On removing certain installations that were made this spring the grease had been forced out of the drain tube, and as the pump bowls were brought from the well this grease, in the form that it came from the drain tubes, was on top of the bowl.

Q. Outside of the pump proper?

A. Laying on the outside of the pump column.

Q. What was the condition of the pump at the time you saw the milky fluid in the pump installed in the pit? Was the pump working?

A. The pump was running.

Q. How long had it been running, do you know?

A. Two or thre yeods.

Q. Will you please state what effect, if any, the rotating shaft of a Western Well Works pump will have on the bearings, or on the tube section, and the connections with the bearings of the hubs?

A. The rotated shaft, working against the spiral of the bearings in the combination coupling, exerts a certain amount of power and tends to drive and force downward the lubricant that is inside of the tube line. The shaft vibration would tend to keep the tube line from making a permanent seal over the hub of the combination coupling.

Q. And the result of that keeping that seal open would be what?

A. Would allow a small quantity of water to pass through and into the tube line on certain joints.

(Testimony of N. T. Bradford.)

Q. Where would that water come from?

A. It would come from between the discharge column and the tube casing, itself.

Q. Have you ever had any occasion, during your experience with the Western Well Works pumps, to employ a stuffing-box at the top bearing?

A. Three times I have had pumps shipped to me and [680] have put on stuffing-boxes.

Q. Will you state the instances in which you applied stuffing-boxes?

A. The first plant was the Armstrong plant at Early Mart; after starting the pump up the water leaked at the surface at the end of the tube line, and spilled over the pump. The party did not wish to allow us to pull the pump at that time, and I put on the stuffing-gland and kept the stuffing-gland on until such time as we did pull the pump and test out certain combination couplings which had sand holes, allowing a direct communication between the discharge column of water and the tube line, in an amount greater than could be taken out by the drain pipe.

Q. That first installation, was that pumping against a head or was it a surface discharge?

Mr. LYON.—We object to counsel leading the witness.

Mr. TOWNSEND.—I am asking an alternative, pumping against a head or a surface discharge.

A. The head was above the level of the ground by six feet.

Q. What was the second instance that came under your notice?

(Testimony of N. T. Bradford.)

A. The second instance was the Higby plant, at Delano, which leaked water at the same place, and we employed a stuffing-box on that until such time as we could change the couplings, and at that time we put in couplings with spiral grooves, and after this change we were able to take the stuffing-box off.

Q. On this Higby plant, was that against head, or was it a surface discharge?

A. The head was perhaps four feet above the ground level.

Q. In regard to that Armstrong installation, after you replaced the defective bearings with good ones, did you employ the stuffing-box further?

A. No; the stuffing-box is not on the pump. [681]

Q. I understand that is the same situation with regard to the Higby? A. Yes.

Q. Now, what was the third?

A. The third pump to be equipped with the stuffing-box was the Ball & Emery Orchard Co., at Porterville, a considerable head above the surface of the ground, and we put on the stuffing-box thinking we might need it; this stuffing-box was never needed, and was subsequently taken off.

Q. On all of these pumps, the Armstrong, Higby and Ball & Emery, did these pumps have drain pipes such as shown in the Western Well Works pumps, or not?

A. Every Western Well Works pump I ever saw had drain pipes.

Q. Have you ever pulled any Western Well Works pumps? A. Quite a number.

Q. Have you ever observed the condition of the

(Testimony of N. T. Bradford.)

connections between the sections and their hubs?

A. After the tubes are taken apart, they are always comparatively loose fits.

Q. Will those disassembled tube sections and hubs show evidence of white lead here? A. They do.

Q. What is the condition of that white lead?

A. Practically the same as the time it was put on. It had not hardened.

Q. Have you ever been able to use the same old tube sections over again after they have been taken out?

A. We do use the same tubes.

Q. When you put them back, what is the usual condition of the fit of these old tubes on the hub sections?

A. They will usually run right to the shoulder by their own weight.

Q. Would you say the fit is such as to exclude any water entering from the discharge column into the interior of the tube?

Mr. LYON.—We object to that as grossly leading.  
[682]

The COURT.—I think you may answer.

Mr. LYON.—Exception.

A. I do not think the fit is such as to exclude the water.

Mr. TOWNSEND.—Q. In reassembling the old pumps which you have taken out, do you use grease around the bearings?

A. Sometimes we do, and sometimes we do not.

Mr. TOWNSEND.—That is all.

(Testimony of N. T. Bradford.)

Cross-examination.

Mr. LYON.—Q. At this Early-Mart well, you say the party did not wish you to take down the construction at that time, and for that reason you put a stuffing-box on the pump. Is that correct?

A. Yes.

Q. And afterwards you pulled that pump and found that there were sand holes which permitted direct connection of the water from the discharge casing into the shaft-enclosing tubes, did you?

A. Yes.

Q. What did you do then?

A. The first thing we did was to put on smooth on.

The COURT.—What?

A. Smooth on, or cast-iron cement.

Mr. LYON.—In other words, you filled up all of these holes where the water was going through the shaft-enclosing tube, did you? A. Yes.

Q. That was what you did to make the pump operate correctly, is that it?

A. Yes, there was an excessive quantity of water passing through those holes, so we plugged them up.

Q. And you shut out all possibility of sand getting into the shaft-enclosing tubing by closing up those holes. Is that it?

A. Stopped any possibility of sand coming through at that point, yes.

Q. Where else did the sand get through?

A. It might at the [683] end of a tube.

Q. Did you ever know of it going through there?

A. I do not.

(Testimony of N. T. Bradford.)

Q. As a matter of fact, you use the tube to prevent sand going through at that juncture and cutting out the bearings of the pump, don't you?

A. I would say so.

Q. Then the object of the shaft-enclosing tubes is to prevent the water being pumped from carrying any sand into the bearings. Is that correct?

A. One of the reasons.

Q. That is the principal reason, is it not?

A. No, I would not say it is the principal reason.

Q. What other reason, in your conception of this pump, is there for the shaft-enclosing tubing?

A. To provide a means of lubrication.

Q. In other words, provide a conduit down which the oil may be conducted from one bearing to another down the column. Is that it?

A. The lubricant?

Q. Yes—this emulsifying oil, just what is that?

A. You will have to ask somebody that knows more about it than I do; it is a preparation that we buy from the Standard Oil Company, which makes a lubricating fluid when mixed with water.

Q. Have you ever been in the shop of the Western Well Works?     A. A great many times.

Q. They use the same compound on their thread-cutting machines, don't they?     A. I don't know.

Q. Isn't that the Standard Oil Company's standard thread-cutting compound, that you call your emulsifying oil?

A. I used Standard oil thread compound.

Q. That is your emulsifying oil that you speak of?     A. Yes.

(Testimony of N. T. Bradford.)

Q. When you assemble one of these new pumps as you have described, you first put a quantity of graphite grease just above [684] the bearings on the shaft. Is that correct? A. Yes.

Q. Then you smear on a quantity of No. 5 standard cup grease. Is that correct?

A. That is correct.

Q. And above that, after you have assembled it, you pour into the top of that section a quantity of oil? A. Not every section, no.

Q. Practically every section? A. No.

Q. How often?

A. My instructions to the installer are every fourth joint pour some oil in.

Q. How much do you pour in at every fourth joint, according to your personal instructions?

A. Perhaps half of a tomato can full.

Q. Did you have anything to do with the installation of the pumps on the Selby ranch for Mr. Sherrer?

A. I don't know the Selby ranch or Mr. Sherrer.

Q. Or recently on a ranch at Palo Alto for Mr. Sherrer? A. I did not.

Q. Known as the White Oaks? A. No.

Mr. LYON.—That is all.

Mr. TOWNSEND.—Nothing further.

**Testimony of Stanley H. Halstead, for Defendants.**

STANLEY H. HALSTEAD, called for the defendants, sworn.

Mr. TOWNSEND.—Q. Mr. Halstead, please state your age, residence and occupation.

(Testimony of Stanley H. Halstead.)

A. I am 39 years of age; I live at San Jose, California. I am an officer and one of the directing heads of the Western Well Works, Inc., whose business is the manufacture of turbine pumps, well drilling machinery, the installation and equipping of wells for municipal service, industrial service, and irrigation service, and the corporation [685] does also some job work at times.

Q. Are you familiar with the pump manufactured by your company? A. I am.

Q. Its construction? A. Yes.

Q. And operation? A. Yes.

Q. I show you a patent and ask you if you know what that is. If so, please state to the Court what it is.

Mr. LYON.—Wait a minute. The patent speaks for itself. It is a patent pleaded in your answer as the one under which you allege you are operating. Offer it in evidence. The witness cannot add anything to what it shows in that regard. It is incompetent.

Mr. TOWNSEND.—Q. Are you, Mr. Halstead, the patentee therein mentioned? A. I am.

Q. Have any pumps been manufactured according to this patent?

A. They have. All of our pumps.

Q. What is that?

A. I say all of the pumps we turn out are manufactured under that patent.

Q. All of the Western Well Works pumps are manufactured under this pump? A. Yes.



(Testimony of Stanley H. Halstead.)

Mr. TOWNSEND.—I offer this patent as Defendants' Exhibit "W."

(The patent is marked "Defendants' Exhibit 'W.'")

Q. Are you familiar with the Anderson pump which plaintiff has introduced in evidence as their Exhibit 4?

A. Only in so much as it represents our standard construction at the time that pump was sold.

Q. Do you know about the sale and installation of that pump? A. I made the sale myself.

Q. Do you know when that was?

A. It was early in 1916, I think January or February. I have refreshed my memory as to [686] the date of the contract—in fact, it was not a contract; it was simply a letter ordering it, ordering five of those pumps at one time, to be delivered throughout the season.

Q. Do you know what condition that pump was in when it was sold by the Western Well Works to the Anderson-Barngrover Co.?

A. It was a new pump.

Q. And its condition otherwise, as to the fit of the tube sections with respect to the hubs.

A. The fit of the tube sections of course I did not inspect. It had the same standard of taper on the hubs as we were using at that time.

Q. Do you know who installed that pump?

A. The installer of those pumps was a man by the name of Benjamin Sperry.

Q. You have heard Mr. Folsom state that they had been installed under his supervision.

(Testimony of Stanley H. Halstead.)

A. Yes, they were installed the second time under his supervision; not the first time.

Q. When you say installed the second time, what do you mean?

A. They ran the full season of 1916 in wells which were comparatively shallow; but during the fall or winter, I have forgotten which, they informed me that they wanted to deepen the wells, they were not getting enough water; in fact, the pumps were previously designed for a small quantity of water; when they got ready to deepen the wells they sent down to send up crews so as to pull out the pump so as to deepen the well. At that time we sent Mr. Folsom up on the job. He was not in our employ at that time, he was simply loaned from an electrical concern in town with whom he was associated at that time.

Q. What did he do to the pumps when he pulled them at that time?

A. Just exactly what he did with the pumps, I don't know. Presumably, he pulled them out and laid them at the side of the well, [687] because that is the normal procedure.

Q. Do you know if any replacements were made at that time on the pumps?

A. No replacements to my knowledge, that I can remember, distinctly, now; it seems to me before they were put back—

Mr. LYON.—We object to this as incompetent; the witness don't know; he can't speculate on it.

Mr. TOWNSEND.—Q. Would you have known if any changes had been made?

(Testimony of Stanley H. Halstead.)

Mr. LYON.—We object to that as leading and suggestive. We do not contend that any changes were made by him. We are willing to stipulate with you there were no changes made.

Mr. TOWNSEND.—The same tube sections and parts went back into the pump the second time it was put back into the well?

Mr. LYON.—We are only concerned with what is here now.

Mr. TOWNSEND.—With this understanding, that these tube sections were used again in the re-installation, I have no further examination.

**Cross-examination.**

Mr. WHITE.—Q. The pump construction, Mr. Halstead, in the patent referred to here, Exhibit "W," embraces hubs each having parallel sides and not tapered sides. Is that correct?

A. I did not notice the patent showed parallel sides.

Q. Look at the drawing of the patent and state what it shows in that regard, whether these hubs have parallel sides or tapered sides.

A. As drawn in the specifications, they apparently show a straight side, though that feature was not taken into consideration when I took out the invention.

Mr. WHITE.—That is all. [688]

**Testimony of E. P. Lesley, for Defendants.**

E. P. LESLEY, called for the defendants, sworn.

Mr. TOWNSEND.—Q. Will you please state your residence and occupation.

(Testimony of E. P. Lesley.)

A. My residence is Stanford University, Campus, Stanford University; my occupation is professor of mechanical engineering at Stanford University.

Q. What field does your faculty connection cover?

A. Rather a broad one. I have general supervision of all courses dealing with machine construction, of course machine-shop practice, foundry—

Mr. LYON.—We will admit the qualifications of this witness generally as an expert, only requiring such qualifications as are required as to any expert testimony that he is going to give; in other words, if he is going to testify to anything with regard to specific features or structures, we want his foundation on that particular structure shown. If he is going to testify to any of the defendant's structures, we want to know what he knows about those.

Mr. TOWNSEND.—Just tell us, in answer to counsel's suggestion, Mr. Leslie, what experience, practical or otherwise, you have had qualifying you in hydraulic engineering, with reference to pump construction.

Mr. LYON.—Bring him down to what he knows about defendants' pumps. We admit he is qualified in regard to hydraulic engineering.

Mr. TOWNSEND.—Q. Touching upon the subject that counsel is most anxious about, give us your knowledge of the structures here in controversy.

A. With respect to the defendant's pump, I have been familiar with it for about two years. In the past year, I have been [689] retained by them in

(Testimony of E. P. Lesley.)

an advisory capacity, and I have watched operations in their shop, have examined their pump, and I have superintended the installation of one pump at Stanford University; I have recommended with reference to the pressures of pumps—not always that pump—in that time, both for Stanford University and for other clients; I have tested the pumps as manufactured by the Western Well Works, making observations to determine the functions of various component parts.

Mr. TOWNSEND.—Does that satisfy you, Mr. Lyon?

Mr. LYON.—I don't know what you want to prove by this witness. I wanted to shorten this all I could, in regard to his qualifications.

Mr. TOWNSEND.—Q. Are you familiar with the plaintiff's patented structure? A. Yes.

Q. I mean of the plaintiff's patent in suit?

A. Yes.

Q. I show you a model which is marked "Defendants' Exhibit 'V'" and ask you if you know what that is.

A. Yes. That is a model of the Western Well Works pump, as manufactured by them at their plant in San Jose.

Q. I show you a model which is marked "Defendants' Exhibit 'B'" and ask you if you know what that is.

A. That is a model of the construction as shown by the drawings and revealed in the specifications of the Layne patent, the number of which I cannot recall to mind.

(Testimony of E. P. Lesley.)

Q. Of the patent here in suit?

A. The patent in suit, I understand.

Q. State whether you have had anything to do in connection with the construction of these models, or either of them.

A. I have had general supervision of them, making suggestions as to the materials to be employed, size of the models, and so on, [690] which might show what was desired.

Q. Who carried out your instructions generally?

A. Mr. Conant.

Q. Who has already testified?

A. I believe so.

Q. Are you familiar with the plaintiff's patent in suit? A. Yes.

Q. Will you state how this model, Defendants' Exhibit "B" of the Layne structure, compares with the Layne patent in suit?

A. Except in certain features that appear to me unessential, they are as near as practicable, as disclosed by the drawings and specifications.

Mr. LYON.—We are willing to stipulate that it is a substantial compliance with the drawings of Figure 1, that is the preferred form, and with such changes as have been made, which would be obvious to the ordinary mechanic upon the face of the drawings, if counsel for the defendants is equally willing to so stipulate.

Mr. TOWNSEND.—Thank you.

Mr. LYON.—Do you so stipulate?

Mr. TOWNSEND.—I do. It is a very fair statement.

(Testimony of E. P. Lesley.)

Q. Please briefly explain to the Court the construction and mode of operation of the pump mechanism shown and described in the Layne patent in suit, making such references as you desire to the model of the Layne structure, Exhibit "B."

A. If I may go a little closer to it, the model shows a pump bowl, a shaft surrounded by an enclosing casing, a discharge column, and a representation of a pump head; the shaft and its enclosing casing are in sections, the weight of each section of shafting is borne by a thrust bearing; the sections are—

Q. (Intg.) Give the numbers as you go along.

A. The thrust bearings or support collars are numbered 48; the shaft-enclosing casing sections are numbered 20. In operation the pump would [691] be driven through a sectional line shaft from the top, turning the impeller, which is numbered 38, and by centrifugal force driving the water up the discharge column, No. 23, and delivering it to the surface of the ground.

The COURT.—You mean 23?

A. 23, yes. A lubricating feature is provided, in that the shaft-enclosing casing is made substantially tight against the entrance of water from the well or from the bowls No. 21, against the entrance of water from any point—water or anything that the water might carry with it; means are provided for tightening this tube, substantially sealing it off, both at the bottom and at the top. A stuffing-box, on which I find no number, is provided at the bottom; packing is arranged at the bottom. The

(Testimony of E. P. Lesley.)

stuffing-box is also provided with a top, and in conjunction means is provided for tightening the glands of the stuffing-box, which, of course, cannot be reached from the surface of the ground; that is the tube No. 44, which has at its lower end a sprocket which engages—a sprocket of which there are three, carrying a sprocket chain—the design appearing to be if this tube is rotating, all three stuffing-box bolts would be turned down and tightened at the same time; the stuffing-box gland at the top is the ordinary form with only two bolts. As disclosed in the patent drawings, there is a pipe No. 52 which is described as an air vent; the part marked No. 44 is also a tube, and is provided with a hole into the chamber 47. It is stated in the patent specifications that this whole interior of the shaft casing may be filled with oil; no water can leak into it; there is no other place for the oil to leak out. It is sealed against water at the bottom, it is sealed against oil leaking out; the lubricant may be used for such time as is necessary, until it shall have become spent [692] or worn out, and then that air pressure may be applied to the air pipe, 52, and the oil forced down and into the hole in pipe 44 and upward and out one of the openings that are provided at the top, or that the operation may be reversed, and air may be forced in at the top, thus forcing the oil upward and out of the pipe 52. It may be noted that constructed as is this model, substantially the same as revealed in the drawings, the thrust collars No. 48, 48' and 48'', since they bear the weight of the member 48 of the



(Testimony of E. P. Lesley.)

shaft and impeller below No. 48', and the sectional shaft and so on, would, with their seat upon the bearings, which they are threaded in between the top section of the model, form in some degree a seal holding oil above each of the bearings; in time, of course, that operation, if there were an oil film in there, a certain amount of oil would gradually seep through and would as fed from the top finally fill up the entire chamber. Auxiliary devices, in the form of a wedge mechanism, parts No. 33, with sliding collars, 31 and 28 and connecting rods and toggle links, are provided, as stated by the patent, to secure this mechanism within the well. The weight of the pump bowls, and of the runner, and of the shafting is supported by the shaft-enclosing casing sections, 20, in this particular model, which I should say is substantially correct with the drawings; the weight of the discharge casing, or discharge tube, 23, is also supported by the tube line. As to the lubricating feature, this pump provides what may be termed a stagnant system of lubrication; the lubricant introduced by some means into the tube is held there until it becomes spent. There appears no way by which it can be continuously fed. It is simply held as lubricant might be in the crank case of an automobile; it is filled up [693] and it wears out or is burned out, dissipated. That seems to me as much of a description as I can give.

Q. Can you describe the shaft line construction and method of assembly?

A. The method of assembly as shown in this model, and as shown in the drawings and described

(Testimony of E. P. Lesley.)

in the specification is to provide a sectional shaft, with what I have before termed a transverse collar, 48, and the separate sections of the shaft, as I stated, the weight of which is borne by its own individual bearing. The shaft has an extensible feature, in that there are splined or keyed fits, loose-sliding keys, so that each end of the shaft may be lifted without lifting the lower portion.

Q. In the Layne structure to which you have just referred, state what would result if you removed the shaft casing, 20.

A. The whole apparatus would fall in the well.

Q. I show you a patent of the Crannell patent, Defendants' Exhibit "G," and ask you if you are familiar with it—the Crannell patent No. 425,933.

Mr. LYON.—That and all subsequent questions addressed to this witness in regard to the prior art, or anything of that kind, will be understood as subject to our objection and exception in regard to estoppel?

The COURT.—Yes.

Mr. LYON.—Without the necessity of repeating it.

Mr. WHITE.—I will ask that opposing counsel stipulate at this time, to save the necessity of proving the same, that this Crannell patent has been before the other court, the Courts of Appeal in all of these prior cases.

Mr. TOWNSEND.—That is true. In the Getty case it was used to limit the patent; the Crannell patent was held to be a substantial anticipation.

(Testimony of E. P. Lesley.)

Mr. LYON.—There is no use of stating that.

Mr. TOWNSEND.—I wanted to bring before the Court the facts, so that these decisions may be properly surveyed.

Q. Just explain this Crannell patent, with particular reference to the parts which are numbered 1, 2, 3, 4, 5 and 14 of Figure 3 of the drawing.

A. Figure 1 shows a shaft-enclosing casing; Figure 2—

Q. (Intg.) Pardon me: You say Figure 1 of that, you are referring to numeral 1 and also to numeral 2?

A. Figure 3, No. 1 shows a shaft-enclosing casing; No. 2 shows what is termed in the patent a cylinder which corresponds to the pump bowl of the patent in suit, No. 21. No. 3 shows what is called a diaphragm plate forming a closure between the pump bowl and the shaft-enclosing casing. No. 4 is termed in the specification an aperture through which the shaft may pass. The specification states that the shaft is properly packed at this point, that is, at the bottom of the line shaft. No. 5 is the shaft which is surrounded by the enclosing-casing No. 1. No. 14 is the runner or impeller; in this instance it is an impeller of the screw type, not of the centrifugal type.

Q. I show you a copy of the Eisler patent, No. 522,518, which is in evidence as Defendants' Exhibit "F," and ask you if you are familiar with that. A. Yes.

Q. Kindly give us a brief explanation of the construction and operation of the Eisler structure.

(Testimony of E. P. Lesley.)

Mr. LYON.—You stipulate this is also a part of the prior art that was before the court in each one of these cases?

Mr. TOWNSEND.—It is apparent that it was pleaded; it is not apparent from the record what consideration was given to it.

Mr. LYON.—It was offered in evidence in each one of the prior cases; what the Court thought of it we do not know. [695]

Mr. TOWNSEND.—We are now offering our own explanation of it to this Court for original investigation.

A. With respect to the Eisler patent, I had a model constructed, substantially, as nearly as I could make it with the drawings, and it is a little simpler to see the construction from this, if I may use that.

Q. Who made this model that you are referring to, or under whose supervision was it made?

A. The model was made under my supervision, personally, at Stanford University, by a pattern maker there.

Mr. TOWNSEND.—I will ask that this model be now marked "Defendants' Exhibit 'X,' " so that it may be identified in the explanation the witness is about to give.

Mr. LYON.—In order to save time, we will make the formal objection that the offer of the model is incompetent, no foundation laid, and not properly identified or proven, and allow the Court to reserve that objection for ruling until we have afterwards looked at it.

(Testimony of E. P. Lesley.)

A. This is a model of the Eisler patent as disclosed by the drawing, particularly with reference to Figures 1 and 4, and by the specifications which follow on the succeeding pages. There is provided in this structure a column construction which, as the inventor states, is supported by means of four columns, numbered here 6. To these are fastened an outer casing, No. 7, and an inner casing, which is numbered, as in the patent, No. 4. There is provided a shaft, which is suitably supported by bearings, No. 19, No. 23, 18 and 17 in the bottom. These bearings are carried upon floors Nos. 9, 10, 11 and 12, and also No. 8. These floors, as stated by the inventor, are spaced at suitable intervals around the casing [696] to properly steady and line the shaft. The shaft is provided with vertical adjustment by means of set collars, No. 20 and 22, which may be adjusted in position, and thereby the shaft raised or lowered, and fixed in any desired position, and any vertical motion prevented; a further set collar is particularly called attention to at the bottom—over the bottom bearing—which, as the inventor says, is designed to exclude the sand. Between the inner casing, No. 4, which fits into an enclosed shaft and the outer casing, No. 7, are what are called water passages in what we would term the water discharge column, which provides for the passage of water upward as it is impelled by the runner of the pump. The water is drawn into the pump through ports in the side of the outer casing, entering the suction chamber just below the floor, numbered 11. It then passes upward through a

(Testimony of E. P. Lesley.)

central port and by the action of the impeller, which is shown here as No. 17 is forced out the port, out the bottom of the shaft-enclosing casing, into the passage which leads upward. He calls attention to the fact that this casing extends above the outer casing, so that any water that comes up these passages is spilled over here, and not into the casing around the shaft. A lubricating feature, to which he calls particular attention, is provided, a pipe not numbered in this exhibit—I believe the pipe is 26—which has branch pipes, and they are numbered 27, 28, 29, and they lead to the various bearings, even to the bottom-most bearing of the pump. There are shown in the model and in the patent drawings the intercepting plates No. 31; they are shown in section here; they extend inward radially from the corner of the shaft-enclosing casing, extended downward, and are designed to perform a similar function as that of the so-called [697] diffusion vanes of the more modern turbine pump. The inventor states without them the water would probably circulate continuously in there. It appears that he did not know the entire theory of the turbine pump when he made this design. There are provided in this structure three functions, exclusion of water and detritus from the shaft, and positioning and alignment of the bearings for a shaft, and in this case a means for lubrication which is not, in itself, the shaft-enclosing casing.

Q. That last remark I do not understand, with regard to lubrication.

A. I state that the shaft-enclosing casing in this

(Testimony of E. P. Lesley.)

structure performs no function of lubrication. It performs solely the function of excluding water from the space surrounding the shaft—water or what the water might carry with it—and the function of aligning the shaft, since it provides the floors 9, 10, 11, etc., which are stated by the inventor to be placed at suitable intervals for lining the shaft. The lubricating feature is a distinct feature, a separate pipe provided with an oil cup at the top, through which he states oil may be fed, and by which the pump will be properly and continuously lubricated as long as the supply of oil will last.

Q. These lubricating pipes that you referred to, 26 and 27, are they within or without the shaft-enclosing casing?

A. As shown by the drawing, they are within the shaft-enclosing casing.

Q. And also by the model?

A. And by the model; of course, the model is substantially according to the drawing.

Mr. WHITE.—Q. Down here under the water they are inside the shaft-enclosing casing?

A. Only so far as they could be in the shaft.

Q. That is, they extend beyond?

A. They extend beyond the [698] shaft-enclosing casing.

Mr. TOWNSEND.—I show you a copy of the patent to Mr. Halstead, No. 122,870, which is in evidence as Defendants' Exhibit "U," and ask you if you are familiar with that.

A. Yes.

(Testimony of E. P. Lesley.)

Q. State how that compares, if at all, with the defendants' model, Exhibit "V," showing the Western Well Works structure?

A. There appears to me to be substantial identity of function as disclosed by the model and by the drawings and specifications of this patent.

Q. Taking the Halstead patent and the defendants' pump, Model Exhibit "V," will you please explain the mode of operation of the apparatus therein shown.

A. Explain the mode of operation of this model?

Q. Yes. The construction has been referred to more than once in the case, and it is not necessary to go over that, except as you may want to.

A. In operation, this pump is driven from the top, either by a belt connection or a direct-connecting motor, and the runner is rotated; the centrifugal action of the runner drives the water out in the passage of the discharge column, and it is delivered at the surface of the ground, or above the surface, as may be desired. The particular feature of this pump which may need further explanation is the lubricating system. The top, what has been called the top tube bearing No. 11 is provided with holes that are adapted to receive an oil pipe, to which is attached a drip feed oil cup. Oil is fed into a small receptacle, which is channeled in the upper end of the tube bearing member, No. 11, and as the shaft is rotated it is fed and moved by gravity down the shaft-enclosing casing, No. 8, until it reaches a point near the top of the pump, where it may meet, or where it meets a recess that is cored in



(Testimony of E. P. Lesley.)

the part No. 17, in the bearing part of No. 17; [699] here are provided two drain pipes; these are made in this side installation of quarter-inch pipe that is inserted in the mold before casting. These drain pipes are open to the well without the discharge casing, so that lubricant fed and moving by gravity, or fed by other means down the shaft-enclosing casing, runs out into the well at this point. That seems sufficient explanation.

Q. Have you made any tests to satisfy yourself that the mode of operation you have described is correct? A. Yes, I have made a number of tests.

Q. Will you describe the results of your tests, and show the results?

The COURT.—Show the results in what respect?

Mr. TOWNSEND.—As to the operation of the defendants' pump with respect to lubrication.

The COURT.—Is there any question on that, gentlemen?

Mr. LYON.—I don't know what counsel intends to show by this witness. If he intends to show there is no difference between the mode of operation as to lubrication, alignment, etc., of the Plaintiff's Exhibit 4, which is the infringing structure here, we would like to have the foundation laid. I don't know what counsel hopes to prove by this witness.

Mr. TOWNSEND.—Mr. Layne has already described the operation of this Anderson pump.

Mr. LYON.—The description of this model has been given two or three times already, and there is no use to encumber the record.

Mr. TOWNSEND.—Mr. Layne has not shown

(Testimony of E. P. Lesley.)

how the pump works. He has shown some tests he made under staged conditions, out of operation. We are going to show the actual thing that takes place, and I believe it will be interesting to the Court, and [700] conclusively prove the method of lubrication employed, and the method of operation, and the action that takes place in the defendant's pump.

Mr. LYON.—We object, your Honor, on that statement, until there is a foundation laid to qualify the witness. Plaintiff's Exhibit 4 stands before the Court as an infringing structure, and we would like to have the witness qualify with regard to that installation.

Mr. TOWNSEND.—If the witness be permitted to tell what he has done, and what he saw done, and what was done in the operation of the defendant's pumps, his qualifications will be apparent. Until he has told what he did and what was done, we cannot prejudge. I have asked him what tests he made, and how he made them.

Mr. LYON.—We object to that as immaterial, until a further foundation is laid.

The COURT.—I will let him proceed; perhaps that is the shortest way out of it.

Mr. LYON.—If counsel would state what he intends or wants to prove, maybe we would not lose time; maybe we could stipulate to it.

Mr. TOWNSEND.—We want to settle this very matter that is in controversy, as to the matter of leakage and—

The COURT.—As to the matter of leakage, I

(Testimony of E. P. Lesley.)

don't know how that could be settled by any actual experiment.

Mr. TOWNSEND.—I think the professor will show that by visual and by ocular proof.

The COURT.—There is no question but that a device—perhaps I should not say there is no question—could be made, that is, a particular device, so that it leaks. And I may say [701] further there is no question in my mind that it could be made so that it does not leak.

Mr. TOWNSEND.—We have never found a way that it did not leak somewhere along the line. It is apparent that some joints are tighter than others, and that there may be a leakage in one joint and not in the other, but in a long line of pipe we want to show what the leakage is and what it is for. It has a definite function. I think the professor's experience along that line will clear up any matter of doubt that there may be, and any matter of controversy on the point, because it is proof positive, in contravention of the very theory that they have advanced.

Mr. WHITE.—In that respect, they are going to try to prove with respect to some apparatus, that we know nothing about, he found leakage.

Mr. TOWNSEND.—I am going to have him tell you all about it.

Mr. WHITE.—As stated this morning, if your Honor at the conclusion of this testimony has the least possible doubt that in the operation of these pumps sold by the defendant that leakage does not take place, we want to have the opportunity of tak-

(Testimony of E. P. Lesley.)

ing a ride down 35 miles and let you examine pump after pump put in by them; we will have these pumps taken out of the ground, just as they are put in, and let your Honor see whether or not that leakage takes place. There is no question about the fact in our mind. We certainly do not want this case to go off on any such point as that. That is, if your Honor has any doubt about this matter of leakage, we can take you within 35 miles of the courtroom and show you by the actual installations, and not rely on any expert testimony, or tests made by the professor.

Mr. LYON.—We think it would be absolutely incompetent, [702] to show by this witness that he tried something else. We based our entire case in chief upon the production of a particular pump and proof that it was tight. Now, we think that they can take our pump and offer proof that that pump leaked at these joints, or take us to an actual installation and show it there.

The COURT.—Is it your contention, Mr. Townsend, that the witness will testify that a mechanism constructed in the manner in which apparently this one was, with the use of white lead in the joints, cannot be made water-tight?

Mr. TOWNSEND.—Cannot be made water-tight?

The COURT.—Yes.

Mr. TOWNSEND.—That would be perhaps a difficult proposition to prove.

The COURT.—A man who is expert in mechan-

(Testimony of E. P. Lesley.)

ical construction ought to be able to express an opinion about that.

Mr. TOWNSEND.—I think he could express an opinion, and that he will show under working conditions the matter of that being absolutely tight from top to bottom is almost a practical impossibility.

The COURT.—If you intend to show that, you may proceed; but it would be immaterial to show that any particular pump leaked, except perhaps by way of illustration of a general statement of opinion or theory upon his part, that it would be practically impossible to construct a pump in the manner in which this is constructed that is waterproof.

Mr. TOWNSEND.—I think that will be covered.

Mr. LOFTUS.—There is one other point, that the plaintiff's tests have been made of this pump after it was removed from the ground. Here are some tests that the professor made beneath the ground as the pump was actually operating. [703]

The COURT.—With that promise, you may proceed.

Mr. LYON.—We note an exception.

A. I shall have to refer to a memorandum made at the time to get dates, if it is of any importance. On December 29th of last year I watched the installation of a Western Well Works pump at the farm of Mr. E. W. Conant, on Meridian Road, somewhat west and south of San Jose. This pump was installed in a pit.

The COURT.—This was after this suit was commenced?

(Testimony of E. P. Lesley.)

A. Yes.

Q. After you had been employed for the purpose of testifying in the case?

A. I didn't know then—I had been employed by the defendant to make tests.

Q. With a view, I suppose, of qualifying as a witness? A. I understood that to be the case.

The COURT.—Well, you may go into this, I think, gentlemen, although it would not be of very strong evidentiary value.

Mr. TOWNSEND.—I would like to proceed with the development of his results and show those results, and then we will reach the proper question, if you desire.

The COURT.—It seems to me the question has only two aspects: One is whether, mechanically, it is practicable to construct a pump in this manner which would be water-tight, and, of course, it refers to the enclosing of the shaft, and the other would be to prove by going into the country where the pumps were installed in the ordinary course of business and testing them out and showing as a matter of fact, generally speaking, they do leak a substantial amount of water. Now, by this evidence which you are offering, apparently you are doing neither. You are simply having this witness testify as to an installation that was made after the suit was commenced, and it would be [704] very easy, of course, to put it in such a way as to make it leak.

Mr. TOWNSEND.—I think we will show this was a *bona fide* test; there was no frame-up; we would not be a party to any such thing as that.

(Testimony of E. P. Lesley.)

The COURT.—Not necessarily a frame-up.

Mr. TOWNSEND.—I assume the Court of that fact; and I would put on another witness to show how it compares with their universal practice of installation. I will give every opportunity to demonstrate this was an actual test under working conditions.

The COURT.—You have already shown how they were ordinarily installed.

Mr. TOWNSEND.—As a rule, these go down into a bored well, and it is difficult to see what goes on there. Mr. Bradford has told how he in one instance saw the results of discharge where the pump happened to be installed in a pit. Now, these conditions are rare, and it took the installation here in a pit to make these observations under actual working conditions, because we could not send a diver down there, and he could not get in a 10-inch well, anyway, under ordinary working conditions.

The COURT.—You may proceed, but, of course, it is not of much evidentiary value.

Mr. TOWNSEND.—Its weight your Honor will be the judge of.

The COURT.—You may proceed.

A. This pump had a 79-foot discharge column. The pump bowl and the casing which contained the drain tubes were without the bore of the well, so that it could be observed. It was a 9-stage 10-inch pump; 4 of the upper stages were exposed. This pump was started in operation after I had watched its installation, and in that installation I noticed particularly the type [705] of line joints; they

(Testimony of E. P. Lesley.)

were loose; if anything, they were looser than those upon the model. It was an old pump, that is, the column was old. The bowls, top bearing of the pump and the head were new. The rate of the drain pipe discharge I measured with a gallon can there, and found that it was, roughly, a gallon a minute with that particular installation; I took a sample of it after the pump had been in operation some hours. It is in that bottle.

Mr. LYON.—We object to that on the ground it is immaterial, irrelevant and incompetent.

The COURT.—Overruled.

Mr. LYON.—Exception.

Mr. TOWNSEND.—That bottle is numbered, is it?

A. That bottle is numbered 1. It is the drain tube discharge that I collected.

Q. Will you state the revolutions of the shaft, as you observed it?

A. The rate of revolutions of the shaft was 1162.

Q. R. P. M.?

A. R. P. M. The so-called Emulso oil, as furnished by the Western Well Works, was fed at the top of that pump through a drop-feed oil cup at the rate of 10 drops a minute—oil the same as this.

Q. Please mark that bottle 1a, will you?

A. Oil like in bottle 1a, identified particularly by its smell.

Mr. WHITE.—Do I understand you to say the oil in the last bottle came out of the drain tube?

A. No. Oil like that in this bottle 1a was fed at the top bearing. On a later day, in fact on the fol-



(Testimony of E. P. Lesley.)

lowing day, I made some further observations as to the rate of drain tube discharge. We put upon the discharge elbow at the top a gate valve and inserted a pressure gage, and determined under various conditions of operating [706] head that the drain tube discharge varied in quantity. The quantities were as follows: Under free discharge at the top, with a 79-foot head upon the top pump bowl, a gallon in 1.15 minutes; with 8 pounds pressure upon the gage—the gage was placed level with the discharge pipe, substantially at the top of the well—with 8 pounds pressure it was a gallon in 1.01 minutes; with 16 pounds pressure a gallon in 0.92 minutes; with 26 pounds pressure a gallon in 0.79 minutes. After I had measured these rates of drain tube discharge, I drove wooden plugs into the drain tubes so that they could not leak, and I observed that they did not leak; and then ascended to the top of the pit, where I could observe the action of the pump, and noted that in 25 minutes from the time I had driven the plugs in there was a spasmodic discharge of heavy emulsion from the top, occasionally a bubble of air came out; you would know that it came out of the annular space around the shaft at the top tube bearing; I had plugged the drain tubes at 2:25 P. M.; then I left the pump in operation unattended, drove into San Jose, and came back later, and at 5:10 P. M. the water was running out of the top; the drain tubes were plugged.

Mr. TOWNSEND.—Q. Out of the top—what do you mean by that?

(Testimony of E. P. Lesley.)

A. Out of the top of the tube bearing, at this portion here; it was occasionally coming through one of the holes that are provided for the fitting of the oil lead—there are four provided there, and only one was in service for feeding the lubricant; at that time I noted that if we applied any discharge pressure whatever, that could be distinguished on a gage sensitive to half a pound per square inch, a carefully calibrated Stanford University laboratory gage—if we would apply a discharge pressure of as much as a pound per square inch [707] water would come out of the top of the shaft-enclosing casing through the upper bearing.

Q. That is, when the tubes were plugged?

A. When the drain tubes were plugged.

Q. Have you stated in this test how much the dripping was per minute of emulsified oil?

A. Feeding the emulsified oil in these tests at the rate of 16 to 11 drops per minute. Upon examining closely the drain pipe discharge in that bottle, No. 1, it seemed to me that there was little in it but water, so on January 2d I made two further observations; I gathered two more samples, one is in bottle No. 2, which I took from the discharge of the pump at the top of the ground; that is merely water, so far as I know; that was gathered out of the discharge of the pump; I collected another sample of the drain pipe discharge, which is in bottle No. 3.

Mr. LYON.—Q. So far as you have been able to ascertain, those three samples that you have here

(Testimony of E. P. Lesley.)

in these bottles are perfectly and absolutely free from sand, aren't they?

A. I have been able to observe no sand in them, whatever. The well, you understand, is an old and well-developed well; the water coming from the well is clear as a crystal at all times, no sand in it, no sand stirred up by it at all. At the end of these tests that pump was taken out and returned to the Western Well Works shop, and on January 14 another pump was installed. This pump, so far as bowls, so far as the bottom bearing of the discharge column, that has been called the adapter bearing, No. 17, was the same pump except that a new runner shaft was supplied, and an additional bowl, making it a 10-stage pump; we wanted to operate against somewhat higher pressure—the discharge column, I should have said back there— [708] the discharge column, including the combination coupling, the tube joint and the shaft were all new, had evidently, from their appearance, never seen any service at all. bright, new castings, merely painted on the exterior. I watched this assembly. The tube line joint instead of being loose, comparatively loose, as in the first installation, was on the whole comparatively tight. I saw an occasional one that would sink almost to the shoulder, perhaps within an eighth of an inch of the shoulder, before it would support its own weight. White lead was also used upon the joints. A small amount of graphite grease was placed above each bearing, perhaps what I could put on the end of my finger; above that, after the tube was put into place, was

(Testimony of E. P. Lesley.)

placed a small quantity, I should guess a quarter of a pint of oil, poured into the top of the tube—heavy duty Zerolene, I was informed it was. In this pump we had, the bowls were all the same, they were the same bowls, except that an additional one had been added at the bottom, and in the top one a stuffing-box had been placed, at this point which is immediately above the runner. As I said before, a new runner shaft was supplied. The coupling of that runner shaft was special, in that it was longer than usual; ordinarily, the coupling is immediately above the bearings, perhaps within three-quarters of an inch; we placed the coupling up in the tube about one-half foot.

Q. Did the position of the coupling further up make any difference in the operation?

A. That could make no difference in the operation of the pump. The purpose of that was that we might screw the pump apart at this bowl, from the bowl at this point, and drop the whole runner shaft and get into that stuffing-box. [709]

Q. That could be done without disturbing the rest of the tubing?

A. Without disturbing the whole column assembly whatever, without moving it.

Q. Your purpose was, as I understand it, to test with and without the stuffing-box?

A. To test that installation—the purpose was to test the installation with and without a stuffing-box at that point. That pump was started in operation thus assembled—I had watched the installation of that packing myself; it was four turns, four rings,

(Testimony of E. P. Lesley.)

of, I think it was,  $\frac{3}{8}$ ths squares of packing put in, and then another ring put in on top of that; the joints were broken; a small amount of graphite grease was smeared along each piece of packing as it was put in. This pump was started in operation at 3:40 in the afternoon—we got the installation finished and started running; under a condition of free pump discharge, I noted that for 40 seconds there was practically a continuous discharge of graphite grease and oil from the drain tube; it ran right out, the graphite grease in rather a thick stream, running down by the bowl; in five minutes—the pump was started at 3:40, and at 3:45 I noticed the first drops of water, what appeared to be practically water. At 3:49 water slightly milky in appearance, very slightly, however; at 4:10 I collected a sample in bottle No. 4. The time of collection of that sample was possibly—I don't know how long it took that amount to run out; I made no note at the time; it was some time, as near as I could estimate, perhaps five or ten minutes, or possibly longer, ten minutes. I increased the discharge pressure at that time. That sample was collected with a free discharge. I increased the discharge pressure to 20 pounds per square inch at the pump head, and noted that apparently there was a little more rapid [710] discharge of about the same consistency. I collected no sample. During all of this time, the emulsifying oil, as represented by this bottle, had been fed at the top at the rate of, I have it, 12 drops per minute. That was on January 14, as I have the memorandum. On January 15 I started the same pump in operation

(Testimony of E. P. Lesley.)

again, left it running some time; it ran from 10 A. M. to 2 P. M., under a condition of shut-off head; it was then shut down. Then I started it again. I made no observation of the drain tube leakage in that time. I started again at 3:20 and went down to the bottom of the pit and observed a similar drain tube discharge, occasionally a globule of grease coming from within, a few drops or a little spurt of water, apparently carrying something with it, since it was discolored different from the ordinary water of the well. At 4:10—between the time of 4:10 and 4:25 I collected the sample in bottle No. 5. That conveys to me a very considerably greater proportion of emulsified oil than is contained in bottle No. 4. This would be natural. The pump had been in operation hours and the oil would have time to work down through. This sample was collected after the pump had been in operation, I think, 30 minutes only, and no oil had been put in the pump assembly; it was a new assembly.

Q. Did you still have the stuffing-box on top of the pump bowl?

A. The stuffing-box was there as before.

Q. Where was the water coming from that formed this emulsion?

Mr. LYON.—We object to that on the ground it is incompetent, no foundation laid.

Mr. TOWNSEND.—If you know, having seen it, where it came from.

A. I have an opinion where it came from.

Mr. LYON.—We object to the opinion. It is a mere guess. [711]

(Testimony of E. P. Lesley.)

The COURT.—He may answer.

Mr. LYON.—Exception.

A. In my opinion the water was coming from leaking tube line joint. I base that opinion on the fact that I had watched the installation of the packing. I am competent, I think, to determine approximately the amount of packing necessary to make a joint tight; under the conditions I believe that the joint at this point was tight around the shaft, that water could not enter there. That was the only place it could enter, other than the top of the tube line.

Mr. WHITE.—Q. Did you make a test to find out whether the water came through the packing?

A. No.

Q. You just surmised the water did not come through the packing, but came from the other source: Is that the idea?

A. That is not the idea. I think I am qualified to tell, as I explained about the pressure put upon the packing, as to whether it would make it tight under the circumstances. There was a further incident, I looked at the packing when it was removed, and it gave no evidence of having water passed through it. It was tightly compressed around the shaft. There were a number of other tests. At this time the question arose as to whether we were getting actually all the leakage that there might be through the tube line; that is, a question was asked if I was confident that there was no seal of the bearing by grease or oil that would prevent the water that might have entered from passing down

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(Testimony of E. P. Lesley.)

through, and I made a test to determine if the tube line were free. I poured in water at the top, that is, I poured it into the oil pipe line, which could be said with fair rapidity, much faster than we were feeding the emulsified oil. In some few minutes, the time does not [712] appear clearly, as I remember it it was a very short time, there was a more rapid discharge of liquid from the drain tube. That discharge—I have a very much larger sample—is in bottle No. 6. It is of the same general appearance as that in bottle No. 5. At the end of these tests I have described, the pump was taken out, or, rather, the pump was unscrewed at this bowl and the stuffing-box was taken out; we then inserted a bushing. This was done without disassembling the pump column, or without taking the shaft apart, the bushing having been previously made, a split bushing that accurately fitted the threaded portion where the gland had previously screwed in. I then made determinations of the rate of drain tube discharge, and what it was. This bottle No. 7 was collected as drain tube discharge under a condition of shut-off head. The rate was 1 gallon in two minutes and five seconds, a very considerably slower rate that had been previously encountered in the previous installation, using the same pump bowl and the same bearings upon the shaft; the only difference in fact being the difference in discharge column. This shut-off head at that time was with the 10-stage installation was 26 pounds per square inch at the top of the pump, plus the 79 feet of pump column.



(Testimony of E. P. Lesley.)

Mr. TOWNSEND.—Q. Just a minute; when you speak of a shut-off head of 26 pounds, could you translate that into elevation of water above the head of the pump?

A. Twenty-six pounds would mean, roughly, 60 feet. The figure is 2.31 feet per pound of head. I am rather slow at mental arithmetic; roughly 60 feet, I should say.

Q. One pound pressure means a pressure of 2.31 feet?

A. 2.31 feet. I noted that with free pump discharge, no pressure whatever at the top, merely the pressure of the 79 feet, the rate of [713] the drain pipe discharge was somewhat less; it was one gallon in 3 minutes and 20 seconds, less than had been encountered in the case of bottle No. 7; that is in bottle No. 8. It is a slower drain-pipe discharge than this taken previously, one within three or four minutes of the other. That concludes those tests. In order to have a certain demonstration that the tube line in an ordinary installation, a new installation, was after a short time of operation entirely free from obstruction, so that anything taken into the top would find its way out at the bottom, I made certain further tests on February 9, with the same pump that has been standing there for some time. We started the pump, and I observed the rate of the drain tube discharge, feeding Emulso oil as before, free pump discharge, 1 gallon in 2 minutes and 40 seconds, which is the sample in bottle No. 9. After I had collected that sample I went to the top and fed through a solution of red-

(Testimony of E. P. Lesley.)

dish color, of analine dye—fed that into an auxiliary pipe that I fitted opposite the oil pipe, and in 30 minutes from the time I started feeding this drop by drop, practically so, at a slow rate, the sample in bottle No. 10 appeared by the drain tube. This showed conclusively to my mind that there was entire freedom from any substantial obstruction to the passage of any lubricant down that tube line. I should say with respect to this sample in bottle No. 10 that this specimen, since I collected it, has been in my office a long time, partly exposed to sunlight, and it is very much faded from what it was at the time I got it. At the time I got it the visual demonstration was striking; there was this colored liquid of that sort as we observed it running out of the drain tube at the bottom of the pit, 80 feet, slightly milky in appearance, [714] and then suddenly an almost bluish red liquid running out. The sample as shown in bottle No. 10 has faded since I got it. That is natural with analine dyes. That concludes as much as I can say of the tests upon the pumps.

Mr. LYON.—On the grounds of the objection, your Honor, we move to strike the answer from the record and exclude it from consideration.

Mr. TOWNSEND.—We will carry this matter further, your Honor, to show you other conditions in connection with it.

The COURT.—I will let it stand for the present.

Mr. LYON.—Exception.

The COURT.—Without prejudice to renewing the motion later on.

(Testimony of E. P. Lesley.)

Mr. TOWNSEND.—In whose possession have these bottles been?

A. They have been in my possession since I got them, since I collected them.

Mr. TOWNSEND.—I ask that they be introduced in evidence as Defendants' Exhibits "Y-1," "Y-1a," "Y-2," etc., up to "Y-10," to be considered in connection with the explanation given by the witness.

Mr. LYON.—They are objected to on the same grounds as urged and exception noted.

Mr. TOWNSEND.—Will you state what conclusions you draw from the results of those tests?

Mr. LYON.—That is objected to as incompetent, irrelevant and immaterial, and no foundation laid.

The COURT.—Sustained.

Mr. TOWNSEND.—I will ask, then, what do these tests show?

Mr. LYON.—The same objection.

The COURT.—The same ruling. In order that you may understand the reason for the ruling, perhaps I should state to you [715] that the inference which I assume that you are asking for should be drawn by the judge or the jury; it is not an expert opinion you are asking for; it is a mere inference from such facts.

Mr. TOWNSEND.—It seems to me that he could express, as one skilled in the art, just what they demonstrated.

The COURT.—He has done that in this particular instance; that is, he has expressed the opinion that the oil passage or lubricant passage was kept open

(Testimony of E. P. Lesley.)

in this particular pump during the time it was experimented with, and he has also expressed the opinion that at least some, not all of the water, which was being discharged from these pumps at the lower end of the pump came in through leaking tube line joints. What else is it you want?

Mr. TOWNSEND.—It would be in the nature of a brief summary or deduction as showing the results obtained from that construction. I think, though, that the evidence, itself, points to the necessary inference, and I will pass on in view of the ruling, to other matters, reserving an exception to your Honor's ruling.

Q. Can you state what the effect of the rapidly rotating shaft would be upon the joints between the telescoping tube sections and hub sections?

Mr. WHITE.—That is objected to as no foundation has been laid.

The COURT.—He may answer "Yes" or "No."

Mr. TOWNSEND.—Q. Do you know what the result would be? A. Yes.

Q. Will you please state what the result would be?

Mr. WHITE.—I make the same objection.

The COURT.—If you desire to, you may ask him as to his competency. He has stated that he knows. I think that makes [716] a *prima facie* case of his competency.

Mr. WHITE.—Q. Did you ever make any tests in that respect?

A. Upon the effect of a rapidly rotating shaft?

Q. Yes.

(Testimony of E. P. Lesley.)

A. I have made many observations of the action of a rapidly rotating shaft.

Q. In regard to one of these pumps sold by the defendant corporation?

A. No. I have made observations upon their pumps.

Mr. LYON.—We renew the objection.

A. The effect of a rapidly rotating shaft?

Mr. TOWNSEND.—Yes.

Mr. LYON.—We make the objection on the ground there is no foundation laid.

Mr. WHITE.—We can all imagine what the effect would be of something rotating, that it may shake something, but I do not think he is qualified to answer that question.

Mr. TOWNSEND.—Q. Do you know what the result would be on this shaft if the rotating shaft did shake something, as counsel says?

Mr. LYON.—The same objection.

The COURT.—He may answer if he knows.

A. Yes, I know.

Mr. TOWNSEND.—Q. Will you please state what that result would be?

Mr. LYON.—The same objection.

The COURT.—He may answer. The objection is overruled.

Mr. LYON.—Exception.

A. The effect of a rapidly rotating shaft, provided the bearings are sufficiently spaced, is to produce vibration. Very few shafts are accurately balanced. The effect of vibration upon any shaft would be to keep it loose. [717]

(Testimony of E. P. Lesley.)

Mr. TOWNSEND.—Q. And, it being loose, what would be the result as to the passage or keeping out of water?

Mr. WHITE.—Objected to as immaterial. If this defendant sells a structure, having a shaft-enclosing casing that is tight, it is an infringing structure.

Mr. TOWNSEND.—That goes to the very point in issue. We want to show conclusively that the water passes through there. I don't know how we are going to prove it passes through there unless we get a man to testify to it who knows about mechanics in that respect. This goes right to the point that your Honor was talking about.

Mr. LYON.—The question does not go to the mechanical structure. It goes to theory. If this witness is testifying as to measurements, counsel's observation would be correct.

The COURT.—Have you ever made any experiments, or any observation as to the effect upon a structure of this sort, where the joints are constructed in the manner shown here, put together with white lead?

A. Have I made experiments with them?

Q. Yes.

A. Only these experiments that I have described.

Mr. TOWNSEND.—Q. You have described these as tapered hubs and slip joints on the tube section, have you not?

A. I don't remember that I used the word "taper" at all. I said that I noted that in the second installation of a new discharge column the

(Testimony of E. P. Lesley.)

tube line joints for the most part were borne in weight by the fit upon the hub before they reached the square shoulder that is provided for them. I said something of them, as I remember my words, they descended to within an eighth of an inch; I can't remember of any that went clear down without hanging up. I am certain that I watched every [718] one that was put on. I don't know, of course, what happens on the upper one; you cannot see it, of course, when it is put together.

Q. I believe you observed also that white lead was interposed at all the joints?

A. I said that the white lead was applied to the hub, smeared on by the installer's finger.

Q. Now, coming back to the question, what would be the result as to the passage or keeping out of water in a structure of that sort, in the presence of a rapidly rotating shaft—could the water pass by, or would water leak past, or would water leakage be kept out or could it be kept out?

Mr. LYON.—That is objected to as immaterial, irrelevant and incompetent, no foundation laid, the witness not having qualified to answer the question, and purely speculative.

The COURT.—I think I will let the witness answer if he is willing to answer.

A. The question of rapid rotation has nothing to do with it. The sole question is one of vibration. Vibration with parts weighing what these parts do would necessarily in time jar, wear them loose, which is unavoidable, and that would in time permit greater freedom, or would allow water to enter with

(Testimony of E. P. Lesley.)

greater freedom. That is obvious.

Mr. TOWNSEND.—Q. Have you observed whether there was any vibration of the columns that you were testing out?

A. Yes, there was not only vibration in these two instances, but there was what may be termed gyrations; of course, the whole assembly is hung from the top of the well, and the whole column gyrates in those two instances, very slowly; not at the rate of rotation of the pump shaft, but a slight gyratory movement, weaving of it; that was very apparent; [719] you could see it moving, weaving around.

Q. Is that condition of gyration and vibration one that would be peculiar to those two instances that you speak of, or would that be a condition prevalent in installations in general?

Mr. LYON.—That is objected to as leading, and incompetent, no foundation laid, the witness not having qualified to answer the question.

The COURT.—Overruled.

Mr. LYON.—Note an exception.

A. I think I can answer the question. I could observe nothing in that installation that would lead me to suppose that there were conditions there that would lead to this gyratory action or vibration, nor could I think of just what conditions would apply there. We have been operating a Western Well Works pump for some time at Stanford University. It is apparently rather free from vibration. There is a slight tremor to the whole apparatus.

Mr. TOWNSEND.—Q. What would be the effect of that tremor, would you say, on the joints?



(Testimony of E. P. Lesley.)

A. I don't think there is enough—I do not believe in the Stanford University installation there is enough to have any appreciable effect,—enough that I could observe. You understand that pump is installed in a bored well. I can only observe what is outside of the well above the ground.

Q. What would you say as to the operation of that pump, as far as you have been able to observe it, in comparison with the operation of the pump that you have testified about?

A. The two installations are somewhat different; one is a direct connecting unit, the other is a belted unit; that one factor, of course, may contribute toward vibration, and even gyration, and as it comes to my mind, it seemed that the probable [720] cause of the gyration, not of the vibration, but of the weaving in the Conant installation, it was a belted unit.

The COURT.—What do you mean by belted unit?

A. I mean that the shaft was driven by a belt, your Honor, from an electric motor; the belt had a lacing; the lacing, every time it goes through the pulley, slaps it, gives it a little pound; thus the lacing occurs apparently at long intervals as compared with the rate of rotation of the pump.

Mr. TOWNSEND.—Q. Did you observe the installation of the Western Well Works at Stanford University? A. Yes.

Q. How did that compare with the installation that you tested on the Conant ranch?

Mr. WHITE.—That is objected to on the ground that no foundation has been laid, it not being shown

(Testimony of E. P. Lesley.)

that he ever removed that Stanford pump.

Mr. TOWNSEND.—He saw it put in. I want to show how it compared with the one that was tested.

The COURT.—Overruled.

Mr. WHITE.—Exception.

A. How the installation compared?

Mr. TOWNSEND.—Yes.

A. The installation was practically the same, the pump column—of course, the head was different, because it is a direct connected motor—except for this, in that installation grease in addition to Arctic cup—I don't mean in addition to the Arctic cup grease, but grease in addition to the graphite grease was put around the shaft for a distance above the bearings.

Mr. TOWNSEND.—Q. How did the bearings and shaft tubing and the hubs compare in that installation with those that you saw installed in the Conant structure? [721]

Mr. LYON.—Just a question: Did you measure any of them?

A. Measure any of the bearings?

Q. In the two installations, or did you just compare them with your eye?

A. I did not compare them even with my eye.

Mr. LYON.—We object to the question as incompetent.

The COURT.—Sustained.

Mr. TOWNSEND.—Q. What was the basis for your statement that you observed the Stanford University installation?

(Testimony of E. P. Lesley.)

A. What was the basis for my statement?

Q. Yes, and that you know what went in there.

A. I stood upon the ground and looked at it.

Q. Did you see the tube sections as they were put in? A. Yes.

Q. Did you see the combination coupling at the hub section? A. Yes.

Q. How did these hub sections fit in to the tube sections?

A. I had no particular interest in observing them; I did not pay any attention to them.

Q. Have you observed any other installations of the Western Well Works, so that you would be able to compare it with the Conant installation and demonstration? A. Not that I remember.

Q. Do you use the same method of lubrication on the Stanford pump, or a different one, than you used in the Conant demonstration?

A. We use the same method of lubrication, or feed this oil, that is supplied by the Western Well Works.

Mr. WHITE.—I thought you said in the Stanford installation you put in some Arctic cup grease and you did not use it in the Conant?

A. That is quite true; in the installation we put in—I say we put in—I observed that there was put in—I did not have my hands in it—grease; I don't know whether [722] it was Arctic cup grease or not, but it was a white grease or yellowish grease, different from graphite grease. In the Conant installation we used graphite grease and a small quantity of Zeroline oil alone over each bearing;

(Testimony of E. P. Lesley.)

we put in no other grease at all.

Q. But at the Stanford installation they used graphite, then cup grease, and then the lubricating oil. Is that correct?

A. I believe lubricating oil was poured in there, but I don't know how much of it. I did not pay any particular attention to it. It was apparently a standard installation. This Stanford installation was in April or May of this year.

Q. You say that was a standard installation. Is that correct?

A. Apparently a standard installation. I did not notice any particular difference; it was in April or May of this year, after I had finished with all of the tests that I was interested in conducting.

Mr. TOWNSEND.—In your opinion, is it possible to test one of these pumps outside the ground without operating the pump?

Mr. LYON.—We object to that as immaterial, irrelevant and incompetent.

The COURT.—Sustained. We will take an adjournment now until to-morrow.

(An adjournment was here taken until to-morrow, Wednesday, September 8, 1920, at 10 o'clock A. M.)  
[723]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC., et al.,

Defendants.

**Proceedings Had September 8, 1920.**

Wednesday, September 8, 1920.

**Reporter's Transcript.**

In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

Before Hon. FRANK S. DIETRICH, Judge.

No. 485—IN EQUITY.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation), ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STANLEY H. HALSTEAD, P. E. VAUGHAN, and ALLEN W. ROSS,

Defendants.

Wednesday, September 8, 1920.

Counsel Appearing:

For the Plaintiff: FREDERICK S. LYON, Esq.,  
and WILLIAM K. WHITE, Esq.

For the Defendants: CHARLES E. TOWNSEND,  
Esq., and W. A. LOFTUS, Esq.

**Testimony of E. P. Lesley, for Defendants  
(Resumed).**

E. P. LESLEY, direct examination (resumed).

Mr. TOWNSEND.—Q. Professor Lesley, you described the method of lubrication that you observed in the tests in the Conant pump, and the method of lubrication as it would occur in the pump of the Defendant's Model V, and you have had opportunity, I believe, to observe the structure in the Anderson pump, Plaintiff's Exhibit "4."

A. Yes, sir.

Q. I will ask you what difference, if any, is there in the principle of lubrication in the operation of a pump of defendant's [725] manufacture, where the tube line is tight so that no water can enter the tube line at the tube joints, and a pump where water may enter into the tube line at the tube joints, using, of course, in each instance, the drain pipes at the bottom? A. None whatever.

Mr. LYON.—Just a moment. We object to the question as leading, as grossly leading, and it is incompetent, the witness not having qualified to answer the question. And I move that the answer be stricken from the record until there is a ruling.

The COURT.—The objection is overruled.

(Testimony of E. P. Lesley.)

Mr. LYON.—Exception.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. WHITE.—Q. Where were those tests made of the two pump constructions on this ranch?

A. On the farm belonging to Mr. E. W. Conant.

Q. Is he the father of the chief engineer of the defendant?

A. He is the father of Mr. David Conant; yes.

Q. The man who has heretofore testified?

A. He is the father of the witness who testified here recently.

**Testimony of David Conant, for Defendants  
(Recalled).**

DAVID CONANT, recalled for the defendants.

Mr. TOWNSEND.—We promised the Court we would gage the hub ends of the exhibit to see whether or not it conformed to the standard. I want to state that this whole matter is largely an immaterial issue, as to the tightness of the joints. I will assist in every way to expedite the trial, in showing that the tightness or the looseness is an immaterial matter.

Q. Mr. Conant, have you the gages that were referred to yesterday [726] by which you make tests from time to time as to the standardization of your product?

A. I have the gage of the hub ends of a 2½ inch tube.

Q. Will you now gage this exhibit which has been

(Testimony of David Conant.)

marked "Defendant's Exhibit 'C' for Identification"? I will ask you, first, is that your standard gage? A. Yes, sir.

Q. Is that the gage that is employed in your regular shop practice? A. Yes, sir.

Mr. WHITE.—I would like to ask him a question or two.

Mr. TOWNSEND.—Very well.

Mr. WHITE.—Q. When you were on the witness-stand, you stated that you did not know that the hub construction of the defendant had been changed from a hub having straight sides up to within  $\frac{3}{4}$  of an inch of the seat, and then a taper from there on, and a hub construction having a taper from the end of the hub to the seat; is that correct?

The COURT.—Yes, he so stated.

Mr. WHITE.—Q. What kind of a gage is it that you have? Does that have a taper  $\frac{3}{4}$  of an inch in width, or does it show a taper from one end to the other of the gage?

A. This gage is to measure the outside diameter of the hub at a certain point on the hub.

Q. Does that gage have an interior taper edge to edge?

A. No, sir; the gage does not serve that purpose.

Mr. LYON.—Then, if your Honor please, we object on the ground that the attempted demonstration or measurement would be eternely futile if the gage does not correspond to the hub in any manner.

The COURT.—He may make the measurement if you desire him to do so.



(Testimony of David Conant.)

Mr. TOWNSEND.—It is immaterial, from our point of view, [727] your Honor.

The COURT.—It would not show whether this tapers from the outer edge to the seat, or not, if that is the nature of the gage, but he may make the measurement if you desire him to do so.

Mr. TOWNSEND.—It is immaterial where the taper occurs, or the extent of it.

The COURT.—That is a matter of argument. You may proceed, and make your test or measurement.

Mr. TOWNSEND.—Q. Please state what your measurements have shown to you.

A. The gage does not do down as far as it should, according to our specifications.

The COURT.—How near to the seat does it go?

A. It goes within 9/16ths of an inch to the seat; our requirements are  $\frac{3}{8}$ ths of an inch; 3/16ths of an inch too long a taper.

Mr. TOWNSEND.—Q. State whether or not that hub, as it stands there, would be a commercial hub used in your pumps.

Mr. LYON.—We object to that as leading and suggestive. They have produced it here for that purpose, and we have proved measurements of other hubs corresponding identically with this.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—Q. Were you present at the time the Nielsen pump was put on your place for the demonstration which Mr. Lesley has testified to?

A. Yes, sir.

(Testimony of David Conant.)

Q. State how that installation compared with the standard practice of installation of Western Well Works pumps?

Mr. LYON.—We object to that as immaterial, irrelevant and incompetent.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—That is all. [728]

The COURT.—What is standard practice is open to a great deal of question. You may ask him what was done, and then you may perhaps ask him what is ordinarily done, if he knows. I don't know that he does know.

Mr. TOWNSEND.—Q. Do you know what is done in installing Western Well Works pumps, in assembling them?

The COURT.—You may answer that "Yes" or "No." A. Yes, sir.

Mr. TOWNSEND.—Q. Do you know what was done in assembling the Nielsen pump for the purpose of this test? A. Yes, sir.

Q. Will you state what was done?

A. After the derrick had been set over the pit, the pump unloaded from the truck and placed alongside the pit, the suction pipe was lowered into the well and hung on a clamp; a set of bowls was then attached to it; that was lowered down until the top bowl was even with the top of the pit; and that held in a clamp. The first section of discharge column, with its tube and shaft attached by means of a rope sling, was raised and hung over the pump as now in the well; the shaft was lowered down and screwed

(Testimony of David Conant.)

on to the collar on the top of the runner shaft. The hub was covered with white lead, the tube slipped into position, the discharge column, with its combination coupling on top, lower down, rotated first by hand, and then tightened up with chain tongs. The assemblage was then hung from the derrick, lowered down until this combination coupling resting on the clamp was at the top of the pit. The remaining sections of the discharge column were then attached as this first one.

Q. Referring to Defendants' Exhibit "C" for identification, do you ever make tests for size, such as you made here now?     A. Yes, sir.

Q. State whether or not this hub would pass inspection? [729]

Mr. LYON.—We object to that as irrelevant, incompetent and immaterial, and an attempt to impeach the stipulation of yesterday. We stipulated yesterday, may it please your Honor, that that was one of their standard hubs. After we had measured it, counsel asserted it and we stipulated it in the record.

Mr. WHITE.—And the reason we stipulated it, if your Honor please, was because we knew what the standard hubs were, from our measurements made on last Monday in the field.

Mr. TOWNSEND.—If your Honor please, that particular hub was simply offered at the time it was offered for the purpose of showing the spiral groove, and the method of construction. I don't care whether it goes in, or not. It seems to me it shows

(Testimony of David Conant.)

a part of the defendant's product. The spiral grooves are there. We offered it solely for that purpose at the time. I confess that we waste a great deal of time over immaterial measurements. We do not care whether those things go down and freeze there or whether they fit in with a wedge fit, or not.

The COURT.—Then why take the time to go into it?

Mr. TOWNSEND.—I am willing to pass it.

Mr. LYON.—Are you willing to stipulate it is passed down with a wedge fit so that there is a tight joint at the end of the enclosing shaft casing?

Mr. TOWNSEND.—If it will help you any, yes. Sometimes they are more or less tight. Sometimes they are very tight and exclude water, and sometimes they are not and do not exclude water. It goes back to our system of lubrication, which is a circulatory system, and—

The COURT.—I don't want any argument now. Do you want this to go in, or not?

Mr. TOWNSEND.—I want to identify it as a product of [730] the defendant, in which we have the spiral grooves. We have had it detached from any other exhibit, and we have it here. They can bring any free couplings in here they wish to, just so long as the Court has before it a free combination coupling. I think that for the purposes we brought it in here originally it has been completely proved to be the defendant's product.

(Testimony of David Conant.)

The COURT.—Well, do you want to press the question, or not?

Mr. TOWNSEND.—I offer it now as Defendants' Exhibit "C," inasmuch as we have been talking so much about it.

The COURT.—Very well.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. WHITE.—Q. Have you produced a blueprint disclosing the details of construction and the measurement of the hubs on your coupling sections?

A. I believe I have it with me.

Q. This gage that you have produced here is merely a section having the same interior diameter of your tube section after it has been checked; Is that correct?

A. That is a gage made to fit the hub ends at a certain position. It is of such diameter that it will, when correctly machined.

Q. After one of the tube sections has been reamed, has it identically the same diameter of this gage?

A. A certain tube might have; there is a tolerance in the tube section which would not permit that statement to be made, possibly, as a general statement.

Q. Is it the object of your operation in the factory to ream out the interior of your tube end so that it will have the inside diameter of this gage?

A. No, sir, it is impossible with our method of manufacture.

(Testimony of David Conant.)

Q. You don't aim to ream out the end of the tube so that it [731] will have such diameter?

A. Within manufacturing tolerance, yes.

Q. You do?

A. Yes, within manufacturing tolerance.

Q. So that within practical manufacturing possibilities, the interior diameter of your tubes, after the ends have been reamed out, is the same as this gage: Is that correct?

A. I may make the statement here, if you are making watches, you can use a tolerance much smaller than the tolerance you can use if you are making pumps; so I will repeat what I have said before, yes, within manufacturing tolerance.

Q. The inside diameter of this gage is supposed to be the diameter of your tube end after it has been reamed out, is it?

A. It is the average size.

Q. It is? A. Yes.

Q. Why didn't you say that in the first place?

A. Because that is the answer I gave you to the question you last asked, and not to the first one.

Q. And the interior surface of this gage is not tapered in any way, it simply represents a pipe section: Is that correct? A. Certainly.

Q. Are you prepared to say that in the pump construction at the Selby ranch, where some of your pumps were sold to Mr. Sherrer, the coupling sections did not have hubs identical in dimensions and taper with this hub on this exhibit?

A. No, sir, because I didn't measure the particular hubs that entered that pump, so far as I

(Testimony of David Conant.)

know. That is not my business.

Q. This blue-print which you have produced is dated April 19, 1919: Is that correct?

A. Yes, sir.

Q. And that shows the details of construction of your hub when you taper it only for a width of  $\frac{3}{4}$  of an inch from the seat: [732] Is that correct?

A. Yes, sir.

Q. Have you produced a blue-print, or can you produce a blue-print showing the present construction of the hub?

A. That is the blue-print we are working on to-day. There has been no other blue-print in regard to that part of the pump made since then, that is, no other tracing made from it. Blue-prints have been made from it at different times when we required prints.

Q. Does the taper on this hub, Defenudaits' Exhibit "C," correspond with the taper illustrated here in this drawing, with respect to extending only  $\frac{3}{4}$  of an inch from the seat?

A. I have not checked it for that purpose. I have only checked it for the purpose of seeing that that gage would fit on this hub.

Q. I thought you checked it up yesterday?

A. No, I did not.

Mr. WHITE.—We offer this blue-print in evidence and ask that it be marked "Plaintiff's Exhibit 17, blue-print Defendants' Second Hub Construction."

Q. This blue-print does not show the details of construction of the exterior of the hub couplings as

(Testimony of David Conant.)

the same exist in the exhibit?

A. What are the variations. I can't see it from here.

Q. I will show it to you.

A. The difference between these two is a matter, on the exterior of the casting, which is not machined, a point which has been made in order to adapt that coupling to an automatic machine which we have recently installed.

Q. Have you a blue-print disclosing its exterior appearance?

A. There has been no blue-print made of that.

Q. Yesterday you stated, I believe, that this hub was machined at the same time the coupling was threaded, and, therefore, that the machining of the coupling didn't cost anything: Is that correct?

A. I did not state, as far as I can recall, that the machining of the hub did not cost anything. It was [733] made in the same operation as finishing the rest of the hub.

Q. When you say it was made in the same operation, you mean that the hub was made, was machined, and then the threading of the hub?

A. No.

Q. You mean that simultaneously the hub is machined and the hub is threaded? A. No, sir.

Q. Well, what do you mean then?

A. There are two or three operations to finish the end of one of these hubs. There are tools which make a certain cut on the hub and that same forming tool carries cutters which face out the portion that is threaded. The cutters which finish the hub



(Testimony of David Conant.)

are attached to the forming tool, which also has cutters to face the threaded portion and cut recesses. The facing operations are done on the same tool, whether it is the part that is threaded, or the hub.

Q. But not done at the same time?

A. You cannot thread and face at the same time with the tools we use.

Q. So that the machining of the hub is a matter of expense to your company, that is, the machining in such a way as to taper the hub?

A. It is in this respect, that when the tools are built the cost of the cutter is in addition to the cost of the cutter which faces the other piece at that time.

Q. About what is the cost of so machining this hub, and about what time is consumed in the machining operation?

A. The labor cost, as far as I could say, is nothing in addition to what we would have to pay for the machining of the coupling, itself.

Q. What is the cost, in your estimation, of machining the hub in that way?

A. I cannot give you an estimate on that.

Q. Does it not take more time to machine a hub in that way than it would if you did not have the machine at all?

A. I have just made the statement that the labor charge would not be more. [734]

The COURT.—I don't understand how that could be. Can you explain that? I understand they are consecutive operations.

(Testimony of David Conant.)

A. Yes, sir. You take a rough casting; it is clamped in a clutch; the tool which enters here has cutters on the outside which face that and cutters on the inside which face this. Before that is threaded it must be smoothed out, you don't thread on a rough casting. When this tool enters here, it is a casting with several cutters on it, it is a gang cutter, it cuts this and cuts that outside, preparatory to threading.

Q. Those two operations, then, are simultaneous?

A. Yes, but that is not the operation of threading; that is a separate operation. There is nothing done to the hub at the time that is threaded.

Mr. WHITE.—Q. Have you still got that blue-print you gave us yesterday showing the hub construction having the straight sides?

A. I have not.

Mr. WHITE.—Mr. Townsend, could you supply us *what* that blue-print? We would like to put it in evidence.

Mr. TOWNSEND.—I would if I had it here. That was an old one. I have not seen it since it was exhibited. It bore a date prior to 1916. I will be very glad to supply it if you want it.

Mr. WHITE.—Yes, I would like to have it. That is all.

#### Redirect Examination.

Mr. TOWNSEND.—Q. How long has the practice been followed, as shown in that blue-print, of tapering to  $\frac{3}{4}$  of an inch, if you know?

Mr. WHITE.—Objected to on the ground that the

(Testimony of P. E. Vaughan.)

witness has already disqualified himself from answering that question.

The COURT.—The objection is sustained.

Mr. TOWNSEND.—That is all. [735] .

**Testimony of P. E. Vaughan, for Defendants.**

P. E. VAUGHAN, called for the defendant, sworn.

Mr. TOWNSEND.—Q. Please state your occupation.

A. I am an executive officer of the Western Well Works.

Q. One of the defendants in this case?

A. One of the defendants in this case.

Q. Are you familiar with the defendant's construction? A. Yes, sir.

Q. Are you familiar with the methods of installation and operation? A. Yes, sir.

Q. Have you ever installed any Western Well Works pumps?

A. At numerous times.

Q. Have you ever had occasion to remove any Western Well Works pumps?

A. In many instances.

Q. Are you familiar with the method of lubrication employed in the Western Well Works construction? A. Yes, I am.

Q. Will you please state what effect, if any, the tightness of joints in the Western Well Works tubing has?

Mr. LYON.—That is objected to as incompetent, and no foundation laid, the witness has not shown

(Testimony of P. E. Vaughan.)

himself to be qualified to answer the question.

The COURT.—I do not believe I quite understand the question. Will you read it, Mr. Reporter? (Question read by the reporter.) The objection is sustained.

Mr. TOWNSEND.—Q. I should have made it clearer. I mean what effect has it on the lubrication; what effect on the tightness of the joints of the Western Well Works pump has the lubrication of the pump?

Mr. LYON.—The same objection.

The COURT.—Do you mean the tightness or the openness of [736] the joints?

Mr. TOWNSEND.—The tightness or looseness of the joints on the hubs, what effect that has upon lubrication.

Mr. WHITE.—We object on the ground that it has not been shown that he knows what kind of a joint is in that construction.

Mr. TOWNSEND.—Oh, well, I am shortening it up. He is one of the manufacturers.

The COURT.—I think you may ask him a question that would perhaps be partly hypothetical, assuming that the joints are open, or assuming that they are closed, what effect will that have.

Mr. WHITE.—We have no objection to that.

Mr. TOWNSEND.—Q. I will put it this way. Will you state what the difference in operation is, if you know, if there is any difference, in the lubrication system in the Western Well Works pumps, where the joints are open or loose, and where water can enter at those joints, or where the joints are

(Testimony of P. E. Vaughan.)

tight and no water can enter the joints?

Mr. LYON.—We object to that as incompetent, no foundation laid, the witness not having qualified himself to answer the question; also as immaterial and irrelevant.

Mr. TOWNSEND.—I did not think it was necessary to go all through the building of the pump.

The COURT.—He may answer. The objection is overruled.

A. The difference would be none. The effect would be slightly different, depending on the amount coming.

Q. The amount of water, do you mean?

A. The amount of water coming in at the joints; by our system of lubricating—

Mr. LYON.—We object, your Honor, the witness has answered the question. [737]

The COURT.—Yes. That would be going beyond the scope of the question.

Mr. TOWNSEND.—Q. It has been testified here that the defendant uses emulsifying oil; do you know of such use? A. We do.

Q. Are you able to state why emulsifying oil is used? A. I am.

Mr. WHITE.—One minute. That is objected to as immaterial, irrelevant and incompetent, and not calling for a fact that is relevant.

The COURT.—The objection is overruled.

Mr. TOWNSEND.—Q. Will you please state why you use emulsifying oil?

A. We use an emulsifying oil for the reason, first, that in its pure state it is a good lubricant,

(Testimony of P. E. Vaughan.)

and mixed with a sufficient quantity of water it is still a good lubricant. Second, by reason of the fact that after the pump is shut down, the water in our pump comes back on the inside of the column line, to the static head of the water in the well, and it forms a milky coating over the bearings and the shafting, and the inside of the tube, and prevents rust action. It is very essential that this be done wherever possible, for the reason that as soon as a piece of metal, or steel, or cast iron is exposed to water, especially in an inoperative form, it commences to oxidize, and immediately when starting up the pump the portion that is in the bearing will throw off the rust particles and cause them to cut and wear the shaft and bearing.

Q. I show you a blue-print which is marked "Plaintiff's Exhibit 2," of the open pit, unprotected-shaft-pump installation, and ask you if you have ever seen any installation of that character?

A. Many; a great many.

Q. Where have you seen such pumps, and how recently?

A. I have seen them the last few days in the Santa Clara Valley; in the [738] last five years I have seen them almost in every portion of the state.

Q. Have you seen them in operation?

A. Quite a good many of them.

Q. Were they pumping water?

A. Pumping water.

Q. Were they pumping successfully or unsuccessfully?

(Testimony of P. E. Vaughan.)

A. Apparently satisfactorily and successfully.

Q. Have you, in the Western Well Works, in the sale of your pumps, come into competition with this open pit, unprotected shaft construction?

Mr. LYON.—We object to that as leading and suggestive, and as calling for the conclusion of the witness.

Mr. TOWNSEND.—Q. State whether or not you do come in competition with them.

Mr. LYON.—The same objection.

The COURT.—The objection is overruled.

A. We have come in competition with them.

Mr. TOWNSEND.—Q. Do you know of any concern or concerns now manufacturing or featuring open pit, unencased-line-shaft pumps?

A. I know of a great many manufacturers that are offering them for public sale.

Q. Can you mention some?

A. The American Well Works, of Aurora, Illinois, have a catalog out on them, and have agents on the coast. I know several districts in which we come in active competition with their sales agent. The United Iron Works, across the bay, in Oakland. I have seen Byron Jackson installations within eighteen months—I presume they were made within that length of time; I don't know that they feature them, or advertise them very heavily, but I know of agents who have put in new Byron Jackson pumps within a year and a half. Our [739] Terra Bella agent comes in contact with competition from—

(Testimony of P. E. Vaughan.)

Mr. LYON.—We object to this, unless it is of his own knowledge, your Honor.

Mr. TOWNSEND.—Q. Speaking of your own personal experience and acquaintance with this construction, that is what we are asking for.

A. We come in contact with considerable competition with the pit pump, especially in the Santa Clara Valley, where I personally observed it, and noticed it, and saw it.

Q. You understand that my question and your answer are directed to construction such as shown in the blue-print, Plaintiff's Exhibit 2? A. Yes.

Q. Are you able to say whether your pump, represented by Defendants' Exhibit "V," would be a practical pump with the encased line tubing or shaft tubing removed—with the shaft tubing removed?

A. Yes, it would be a practical pump.

Q. Have you ever seen any deep well turbine pumps with the shaft concentric with the discharge pipe, and the shaft-bearings and shaft unprotected?

A. I have.

Q. Where, and when?

A. Several this spring, built by a competitor of ours locally—San Jose.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. LYON.—Q. Did you personally have anything to do with the sale of pumps to a man by the name of Sherrer, at the Shelby ranch, near Palo Alto? A. I did not.

Q. Do you know of that sale?



(Testimony of P. E. Vaughan.)

A. I know it was made, yes.

Q. Do you know what kind a pump was displaced by the first one of your installations?

Mr. TOWNSEND.—That is objected to as immaterial, and not cross-examination.

The COURT.—The objection is overruled. [740]

A. I don't know what kind of a pump was replaced.

Q. Didn't you know that the contract was given you to replace a United Iron Works unprotected centrifugal pump that had gone bad because of the bearings being cut out by the sand within three hours of its installation?

A. I don't know this, but I will say this much, that there was talk around the office, and I think we did replace such pump.

Q. As you understood it, that was the reason why you got that installation, to replace a pump of the United Iron Works that had gone bad in three hours' time in the bearings because they were unprotected, was it not?

A. I heard very little discussion about it around the office, but I am confident that we did replace a pump built by some competitor; as to the reason why, we did not care, and I am not familiar with it.

Q. That was one of the competitors that was making the unprotected bearing pumps that you refer to here?

A. I think they do, and I think they still make it. Those pumps function perfectly in certain conditions.

Mr. LYON.—That is all.

(Testimony of P. E. Vaughan.)

Mr. TOWNSEND.—That closes the defendants' case, your Honor, with this suggestion I would like to make: I wish formally to move that the contract of October, 1914, which has been introduced in evidence by the plaintiff, I think as Exhibit 3, be excluded from consideration upon the ground that it is immaterial, and it having expired, and having no bearing whatever upon the case.

The COURT.—That question will be given consideration ultimately; I will not pass on that now.

Mr. LYON.—We wish to renew our motion to strike from the [741] record and exclude from consideration the testimony of Professor Lesley with regard to tests that he made with the pumps on the Conant ranch.

Mr. TOWNSEND.—I would like to have an opportunity to be heard on that, if your Honor feels disposed to decide adversely.

The COURT.—I am inclined very much to think that that is self-serving testimony, and is objectionable for that reason.

Mr. TOWNSEND.—That would be probably true of any tests, they may be self-serving, or they might be just the contrary. That test was made *bona fide*. These defendants have been sued; they have had no occasion to make a test to ascertain those things; they had a merchantable commodity which they were selling under their own patent, their own exclusive patent, with the right, under the patent, to exclude all others from that patented structure. Your Honor knows the presumption of law that

where such a condition as that arises the defendant is presumptively a noninfringer.

The COURT.—That is true. The difficulty about this particular test or experiment is as suggested by me originally, it would be very easy, of course, to make an installation of this kind that would leak, that is, to leave one or more joints in such condition that the water would percolate through and into the tubing. Apparently, the only purpose of the experiment, or the only result of it, is to show that water did get into this tube and come out through the discharge vent—

Mr. TOWNSEND.—May I interrupt to correct your Honor in that matter? That test was made to see whether the theory of operation, as is presumed to exist as to what takes place in the well, that the lubricant, or whatever is fed in at one point comes out at the bottom. When Professor Lesley applied [742] the analine dye test at the top and it came out at the bottom, it showed that that pump worked on a circulatory system. In a sense, it was not necessary for us, in view of the admissions that that is what happens in the Anderson pump, where the oil goes from bearing to bearing and out in the well. The tests by Professor Lesley conclusively demonstrated that because they were proof positive to the eye, aside from any other deductive information that may be drawn. It brings our pumps within the doctrine of the Getty case, and the decisions of the Circuit Court of Appeals of the Fifth Circuit, that a pump which employs a circulatory system of oiling does not infringe the stagnant system of

lubrication of the Layne patent. Those tests were proof positive of the circulatory system. The leakage is an incidental feature. If you have some leakage it produces the emulsified action. Where the leakage comes from is not so material. I am referring to this now, because I think it may tend to shorten the rebuttal. If it is intended to prove a tight joint, or a loose joint, I am willing to concede now that that Anderson test, if it shows it is a tight joint, that it is a tight joint. But whether those joints are tight or sealed cuts no figure, so long as there is the communication of the lubricant through the tube line and out into the well.

I want to make our position perfectly plain, and show that we lay all our cards right on the table here, and we are not depending on any fine points as to a loose fit, whether it keeps out water or keeps in water. We did feel that by the demonstration we would have an opportunity to observe all the conditions, favorable or unfavorable to us, and to see the conditions as they actually existed. There may have been some leakage, or there may [743] not have been leakage. Water came from somewhere. I think that those tests are highly instructive. There *bona fideness* will not be questioned, I think, even by the plaintiff, because we are not here to trifle about these matters. This is a serious matter affecting the entire industry, and the business of my client.

The COURT.—That is true, but tests might have been made of regular installations. As I have suggested, the difficulty about this is not that the Court is going to find there was any bad faith in a partic-

ular experiment, especially on the part of Professor Lesley, but the question, however, is as to whether or not the installation here was made precisely as installations ordinarily made. It appears to the Court that it would be very easy to affect the operation of this pump as respects to which you refer by slight changes in the actual installation. It may or may not be that there would be this circulatory system rather than that the system would act as a circulating system of lubrication if no water entered the tubing. Possibly the water has something to do with making efficient the circulation of the oil.

There is this further suggestion in connection with this particular installation as it appears from the testimony of Professor Lesley, that when it came to installing the pump at Stanford University, there was apparently introduced into the tubing the usual amount of hard grease, or heavy oil—that which was somewhat immobile, at least, whereas, for some reason, that was omitted from the particular installation at which the test was made. It does not appear why. It may or may not be that that has something to do with the entry of water into the tube, or the circulation of water, or the circulation of the oil. [744]

Mr. TOWNSEND.—I was under the impression that the use of that oil or grease, or whatever was put in, was made clear in a new installation, that is, on account of the rough surface that is left in a turned bearing.

The COURT.—It is not made clear to me why so much is put in at a distance from the bearing.

Mr. TOWNSEND.—I think if that doubt exists

in your mind I would ask leave to have it cleared up. We want to know everything about this matter of lubrication, and how it is done, and why it is done, to see whether or not that interferes with the circulation. I do not believe your Honor has the impression that the tube line is filled with hard grease, or filled with any other particular kind of grease. I am sure your Honor has not that impression.

The COURT.—No, it is not filled. As I understood it from one of the witnesses, the installation takes place in about this manner, that when they are ready to assemble the pipe, as much grease is put upon the shaft for a certain distance, perhaps one-third of the length of each section, as can be introduced into the enclosing tube. In other words, for a distance of two or three feet upon each section of the shaft there is enough grease to entirely fill the tube.

Mr. TOWNSEND.—I think your Honor is in error about there being enough grease to fill the tube. From all my inquiries that is not the case. They put in enough there so that that is going to work down and smooth the bearing, and then it is expelled very quickly after the pump starts. If you desire some evidence on that point, I would like to make that perfectly clear.

The COURT.—I think you went into that. You asked him [745] if grease was put in there, and why, and to what extent, etc. There is not very much difference between the witnesses on that, that is, I mean the testimony given by your witnesses

and the testimony produced by the plaintiff in the case.

Mr. TOWNSEND.—The grease is put in there to wear down the bearings. What Professor Lesley said was this: In starting the new pump there, where the grease was put in, that grease or heavy unemulsified lubricant was very quickly dispelled out of the drain tubes. We have had the evidence of Mr. Bradford, who had occasion to pull these pumps, where he saw the heavy grease on the outside of the pump casing adjacent to the drain tubes. That had come from the inside. We have had evidence, I think, showing the operation of expulsion. The spiral groove acts to bring that about. Now, as I say, if there is any question on that point as to what becomes of that grease, hard grease or otherwise, I would like to have it perfectly clear now, rather than be surprised later.

Mr. WHITE.—Your chief engineer covered that point, as to what becomes of it.

Mr. TOWNSEND.—If counsel concedes that the hard grease is put in there for the purpose of wearing down the bearings, and is eventually expelled, that will be sufficient.

Mr. LYON.—According to our evidence and according to our contention, it is not put in there for any such purpose at all. It stays there, as the evidence of your witness shows; it has been found there from two to three years after the installation has been had, after the pump has been in use. Your witness testified to that yesterday.

Mr. TOWNSEND.—There is no doubting the evidence that has been given, or of the fact that some of

that heavy grease [746] is splashed around there, and some of it is going to stay in the tube and some of it on the shaft. If your Honor desires to be further enlightened as to why particular grease is put in, and what becomes of it, I do pray the opportunity now that that evidence be adduced on our behalf.

Mr. WHITE.—I think you covered it fully.

The COURT.—Yes, I understood that to be an issue. The plaintiff introduced some evidence upon it; your witness, who formerly installed pumps for you, testified as to that. I don't recall his name. You have elicited testimony from at least two witnesses on that point, as to why it was put in there, and some testimony as to what becomes of it, in whole or in part. I have referred to that, not for the purpose of having a discussion of the merits, or a discussion of that particular feature upon the merits, but as indicating the thought that was in my mind as to how easy it would be to differentiate between a regular installation and an installation of this kind, which was to be observed for the purpose of having the observers testify to the court.

Mr. LOFTUS.—There is one point there, your Honor, that may not have been brought out clearly, but a part of this defendant's pump was removed from the Nielson ranch; it was an old structure, in part, which would probably require a little different installation from an entirely new pump, in the matter of applying grease to work in the bearings. I do not know if Mr. Nielson's testimony is connected up.



The COURT.—I think I will take that under consideration, gentlemen. My present impression, however, is quite strongly against the competency of this testimony. I had thought, when you offered it, it would be connected up more closely than it [747] has been. I may say to you that if I regard it as competent at all, I will be able to give it very little weight. That does not imply that I give Professor Lesley's testimony very little weight; assuming to be true all that he has stated, the question is as to whether or not the installation there was precisely such installation as you make in actual practice. It does not answer that question to say that in a general way the installation was the same; it is a question of detail, because, very clearly, this whole matter of the circulation of oil and of the action of water in the shaft tube, depends upon detail. General installation, or the general process of installing, may be practically the same in two installations, and yet the operation may be entirely different touching these two different features.

Mr. TOWNSEND.—I would like to emphasize one feature further, so that it may be clear in your mind. When you come to consider the other cases, particularly the Getty case, where noninfringement was held, where there was a circulating system, the casings and the tubings were apparently tight. There were tight tubings. That is an artificial issue which the plaintiff has interjected here. We have an additional—different and additional function in our construction, and that is why I say it is immaterial.

The COURT.—If it is, do you desire to stipulate

(Testimony of W. A. Doble, Jr.)

that the installations you make are tight, that is, that the shaft tubing does not receive water?

Mr. TOWNSEND.—I believe that would be a stipulation against the truth, that all of the shaft tubings are tight. Many of them are. I am willing to stipulate that the pump they have there, that they test it, and if they show it to be tight under [748] its present conditions, then it is tight. But if put up again and used, it is a noninfringing structure, it is a circulatory system working from top to bottom. That is the point we want to make clear.

The COURT.—Very well. You may proceed, gentlemen.

**Testimony of W. A. Doble, Jr., for Plaintiff (In Rebuttal).**

W. A. DOBLE, Jr., called for the plaintiff in rebuttal, sworn.

Mr. WHITE.—Q. State your name, residence, occupation and age.

A. My name is W. A. Doble, Jr. My residence is 519 20th Avenue, San Francisco. My occupation is, one of the executives of Doble, Incorporated, a corporation of California doing a manufacturing business in San Francisco.

Q. What engineering experience have you had, if any?

A. I was a student at Stanford University, and in 1917 passed the examination at Benicia Arsenal, and was appointed first lieutenant in ordnance, and was sent to the Bethlehem Steel Company, in South Bethlehem, Pa. From there, I was detailed to Harvey, Ill., where I established an inspection bureau

(Testimony of W. A. Doble, Jr.)

for the inspection of artillery vehicles for the Government. Since then, I have been connected with the Doble Company, manufacturing steam-power plants, and doing general manufacturing work.

Q. State whether or not on September 6th last you visited the Selby Ranch, in San Mateo County, just out of Redwood City, and there inspected a portion of a pump construction represented as having been sold by the defendant, the Western Well Works, and which pump construction has been referred to by some of the defendants' witnesses?

A. I did.

Q. At the time of such inspection, what was done as regards to [749] removing any of the parts of said pump construction?

A. There was a customary tool head erected, and the head disassembled from the pump, and one section of the pump casing removed.

Q. By the removal of that one section of pump casing, were you enabled to see the hub construction and the tube construction?

A. I was able to see the tube construction, and also to measure the hub.

Q. Have you the measurements you made at that time of the hub that you examined in this pump?

A. Yes, I have that.

Q. Just state what those measurements were.

Mr. TOWNSEND.—If your Honor please, that is entirely immaterial and irrelevant; it is not rebuttal; and, furthermore, this witness has shown no qualifications to testify about pumps.

Mr. WHITE.—He is only going to testify as to

(Testimony of W. A. Doble, Jr.)

certain measurements. I think you will find that his measurements correspond to your standard construction here.

Mr. TOWNSEND.—It is wholly irrelevant.

The COURT.—The objection is overruled.

Mr. TOWNSEND.—Exception.

A. I measured the hub that was connected to the tube casing that was projecting from the well, and I found that the largest diameter of the hub was 25/1000ths over  $2\frac{1}{2}$  inches at the large end, and was 30/1000ths, less than  $2\frac{1}{2}$  inches at the small end.

Q. What was the nature of the taper? Was it uniform, or not, from end to end of the hub?

A. Apparently, the taper is uniform. It is a taper from one end to the other. As this one shows, it is not exactly a straight taper. However, it does taper from the small end to the large end.

Q. Have you made any measurements of Defendants' Exhibit "C"? [750]

A. I have measured that, and it is also 25/1000ths larger than  $2\frac{1}{2}$  inches at the large end.

Q. What about the small end?

A. The small end is 38/1000ths smaller than  $2\frac{1}{2}$  inches.

Q. How does that correspond with the Selby ranch pump construction?

A. It is 3/1000ths of an inch smaller. I noted in checking all of their hubs that where I had several of them together they all corresponded exactly, but where the groups were separated there was a small variation at the small end of the taper, but at the

(Testimony of W. A. Doble, Jr.)

large end of the taper, they were all exactly 25/1000ths over 2½ inches.

Q. Did you make a measurement of the interior diameter of the tube section in this Selby pump construction, and if so, what was it?

A. I measured the reamed section of the tube, and found that it was 2½ inches, as near as I could measure it; and that at the forward end, for about 7/8 of an inch it was tapered. I did not measure that taper.

Q. By "tapered," you mean it was bell-shaped at the end of the tube?

A. The tube was bell-shaped to correspond to the taper on the coupling.

The COURT.—Q. For what length?

A. About 7/8 of an inch; it varied slightly from 1 inch to 7/8.

Mr. WHITE.—Q. At the time of the removal of this tube section and the water-discharge section, did you notice any phenomena there which would indicate what the condition of the shaft-enclosing casing was from the pump up to the surface, in respect to the tightness of the joints?

A. I noticed that when they raised the pump, that little bubbles of air and grease were drawn in at the bearing, showing there was a vacuum in the tube. I did not measure it, but that lasted for a considerable [751] time, over 15 or 20 minutes, the drawing in of air at that bearing.

Q. At what point would that vacuum be created in the length of the tube?

A. It would be created at the bottom as the water

(Testimony of W. A. Doble, Jr.)

tended to seek its own level in the well.

Q. As I understand you, then, when the pump was lifted and this tube section was removed, there was some water carried up in the interior of the pump? A. Yes.

Q. And after the lifting of the tube and pump, that water receded in the well? A. Yes.

Q. And that is what caused this vacuum?

A. Yes.

Q. And the fact that that vacuum from the point was communicated up to the top end of the shaft-enclosing tube indicated what, in respect to the tightness of the various joints in such shaft-enclosing tube or casing?

A. It indicated that the length of tube was tight, that all the joints were tight, and that the only entrance that the air could make to relieve the vacuum was through the bearing which was exposed to the atmosphere where we were watching it.

Q. If there had been any holes in that shaft-enclosing casing, intermediate the pump section where that vacuum was created and the top of the tube section at this bearing, would the bubbles you have described appear at the top?

Mr. TOWNSEND.—That is objected to as leading, in the first place, and, secondly, as calling for the speculation of the witness, and without qualification.

The COURT.—The objection is overruled.

Mr. TOWNSEND.—Exception.

A. If there were any holes in the castings, such as sand holes, or if any of the joints were loose, the

(Testimony of W. A. Doble, Jr.)

phenomena that we saw would not have been there, we would not have witnessed it. [752]

Mr. WHITE.—Q. Why?

A. Because the air we saw being drawn in, and the grease, were being pulled through a shaft bearing, and if there were any holes, the vacuum would have gotten in there very much more easily, and would have been relieved without having been drawn through the long bearing.

Q. In other words, if there had been any opening anywhere intermediate the pump, and the top bearing, the vacuum would have been relieved by the air rushing into those holes instead of rushing in at the top bearing: Is that correct?

A. Yes, that is correct.

Q. What kind of instruments did you use in making these measurements?

A. In the tube, I used an inside micrometer, and on the hub I used a caliper, and checked that with an inside micrometer.

Q. What was the condition of the joint between the hub and one end of the tube that was separated at the time of this test or inspection?

A. The top tube bearing was disassembled with the tube, and left on it; it took quite an effort to remove that off the taper, to remove the tube from the taper of that top bearing.

Q. What was the appearance of the metallic surfaces of the hub and the interior of the tube at the second joint? A. That is not at the top.

Q. The second joint from the top?

A. There was a very thin coating of compressed

(Testimony of W. A. Doble, Jr.)

white lead on the hub; and inside the tube there was a very thin coating of white lead, which I with much effort, removed with a rag; but I noticed the top was burnished where it had been pressed up on the taper, it was actually polished, showing that it was expanded on that taper.

Q. How was that burnishing brought about?

A. The burnishing [753] was brought about by forcing the tube on the taper, the expanding of the tube as it was forced upon that taper.

Q. What was the condition of the shaft at this joint?

A. The shaft was polished; it was clean and polished, and showed no signs of water.

Q. What was the condition of the shaft above the top joint bearing?

A. Where the shaft was exposed to the atmosphere it was rusty.

Q. At this second joint, did the tubing seat on the seat of the hub? A. It did.

Q. What have you to say in regard to that fact, in respect to the top-most joint?

A. It did not quite seat, and was slightly rusty.

Q. What was rusty?

A. The end of the tube, whereas in the second joint the tubing was polished, like new, showing that no water had gotten in there from the discharge.

Q. What was the condition of the top-most hub?

A. Do you mean the bearing or the flange?

Q. Between the seat of that hub and the end of the tube.



(Testimony of W. A. Doble, Jr.)

A. Very slightly rusted.

Q. What was the condition of the portion of that hub underneath the tube, as you observed it when the tube was removed?

A. It was polished; it was just as if new; it was just as good as that hub right there.

Q. What was the condition of the shaft-enclosing tube, the exterior of the tube?

A. The lower portion of it was very rusty and eroded; the top end of it, where the water turns to go out, the outlet was very much eroded, and it showed perceptibly.

Q. What about the condition of the interior of the shaft-enclosing [754] casing, that is, the section that was removed?

A. The interior was very greasy; it had absolutely no rust in it; it looked as though it were a new tube.

The COURT.—We will take a recess now, gentlemen, until two o'clock.

(A recess was here taken until two o'clock P. M.)  
[755]

#### AFTERNOON SESSION.

W. A. DOBLE, Jr., direct examination (resumed).

Mr. WHITE.—Q. At the time of inspecting this pump at the Selby ranch did you make any measurements of the outside diameter of the tube, at the end thereof, which was on the hub?

A. Yes, I cleared off the outside of the tube, that is, I cleaned the rust off of it; I micrometered the tube about one-half inch back from the end, and

(Testimony of W. A. Doble, Jr.)

there I found a diameter of 3 inches less  $36/1000$ ths. Then I micrometered the other end and found there a diameter of 3 inches minus  $19/1000$ ths, making a total expansion of the tube of  $17/1000$ ths of an inch.

Q. From that data, what have you to say in regard to the contact between the interior of the tube end and the outer surface of the hub?

A. I would say that between the tube and the hub there was a perfect surface contact for approximately  $7/8$ ths of an inch.

Q. Did you make a measurement of the interior diameter of the gage which was produced here by the witness, Conant? A. I did.

Q. What is that interior diameter?

A. It was  $2\frac{1}{2}$  inches plus a full  $1/1000$ ths of an inch; in other words, it was  $1/1000$ ths of an inch large.

Mr. WHITE.—Mr. Townsend, you have produced here a pipe section or tube section, but you have not referred to it, and no witness has referred to it. Can you tell me if this is one of the standard tube connections used by the defendant in its pump construction, or was this produced as an exemplar of such standard construction?

Mr. TOWNSEND.—Why it happens to be here I don't know. It [756] has not been introduced. I have no objection to giving you any information I can get.

Mr. WHITE.—Q. Have you made a measurement of the interior diameter of this tube section referred to? A. I have.

Mr. TOWNSEND.—I am informed that it is one

(Testimony of W. A. Doble, Jr.)

of the short top sections of the regular Western Well Works casing; I believe that they have two lengths of tube sections, the one being somewhat shorter than the other.

Mr. WHITE.—Q. What did you find to be the interior diameter of this tube section which has just been referred to?      A.  $2\frac{1}{2}$  inches.

Q. How does that interior diameter compare with the interior diameter of the tube section that you examined at the time that you visited the Selby ranch, and also examined at the time that you went to the Palo Alto ranch, where you saw some of these tube sections?

A. Back about an inch from the end they were all approximately  $2\frac{1}{2}$  inches.

Q. What is the diameter of the reamed-out section at the end of each one of these tubes?

A. That is the  $2\frac{1}{2}$ .

Q. You mean to an extent of  $2\frac{1}{2}$  inches back that is the diameter?

A. Not that; I mean  $2\frac{1}{2}$  inches—I had to measure back from the end, because the tube was flared; it had been expanded on putting on the coupling, and when I measured back of that the diameter was  $2\frac{1}{2}$  inches as it was reamed.

Q. Will you apply this tube to the hub in Defendants' Exhibit "C" and state how far down the end of the tube extends on the hub, or at least how far the end of the tube is from the seat on the hub before you have to apply pressure to drive the tube further onto the hub?

A. Of course, that goes down a little by its own

(Testimony of W. A. Doble, Jr.)

weigh, but that is approximately  $\frac{5}{8}$ ths of an inch.

Q. In order to seat this tube on a seat of the hub, would or would [757] you or would you not have to apply force?

A. You would have to apply a tremendous force, because that tube has to be expanded almost  $\frac{25}{1000}$ ths of an inch to seat on the hub here.

The COURT.—Try the other end.

A. That is also  $\frac{5}{8}$  of an inch. Both ends are of the same interior diameter.

Mr. WHITE.—Q. In view of the identity of these measurements, what have you to say in regard to the fineness of the machine work used in constructing these tube ends, or reaming them out?

Mr. TOWNSEND.—That is objected to as immaterial, and as not rebuttal, and no foundation laid.

The COURT.—Overruled.

A. The accuracy of the workmanship on the tapered hub and on the interior of the tube is extremely high. It is a very high grade of workmanship, and they are very accurate.

Mr. WHITE.—Q. You mentioned the fact that when you examined this pump at the Selby ranch a portion of the hub was rusted, and the end of the tube was rusted. Will you point out on this structure, Defendants' Exhibit "C," the part of the device you referred to as being rusted?

A. It was the top screw bearing that was rusted, or the shoulder that meets the end of the tube. Apparently, from looking at it, it looked like, as it made a tight joint, as though the tube had wet this shoulder here on the screw top bearing.

(Testimony of W. A. Doble, Jr.)

Q. Pointing to the model?

A. Pointing to the model. You see, they have shown that on the top bearing, and this tube, apparently, as far as we could see, butted right up against that, and when we took it apart it was slightly rusted on this [758] surface, and on that surface, showing that there was a little crack in there that moisture had penetrated through, but that the interior of the tapered surface of the hub and the tube were perfectly bright, perfectly polished; there was no sign of water deterioration whatever.

Q. I presume that simply indicated to you that where these parts were exposed to the water this corroding effect resulted? A. Yes.

Mr. WHITE.—Will you permit us to introduce in evidence this tube section that you have produced?

Mr. TOWNSEND.—Yes.

Mr. WHITE.—I will offer that tube section in evidence and ask that it be marked "Plaintiff's Exhibit 18, Defendants' Enclosing Shaft, Tube Section."

Q. You stated that it would require some considerable force to seat one of these tubes on the hub. Will you state how that pressure is exerted in the assembling of one of these defendants' devices?

A. The pressure exerted to force that tube up on the hub is exerted by screwing the two adjacent couplings together onto the tubing, and that forces the tube at either end on the taper of the hub.

Mr. TOWNSEND.—You are speaking of the

(Testimony of W. A. Doble, Jr.)

tube section, now, adjacent to the pump outlet?

A. I am speaking of the outlet pump casing; the couplings are screwed on it, and in doing so they force the inner tube up on the cones of the couplings. That is, I am speaking of this tube 9a. These two couplings, 17a and 17b are screwed on that, and as the threads wind up on each other, it forces this inner tube up on the taper of the hub.

Mr. WHITE.—That is all. [759]

Cross-examination.

Mr. TOWNSEND.—Q. I understand, Mr. Doble, that when you pulled this Sherrer pump on the Selby ranch Monday last, that you observed, as you pulled it up from the well, the entry of bubbles around the top tube bearing. Will you state again what created the bubbling action that you saw there?

A. As the pump, the whole pump casing and pump were raised from the well, the water in the pump lowered to the level of the water in the well, and the lowering of that water in the pump casing reduced the pressure below atmospheric in the outer discharge column of the pump.

Q. You say the water in the pump.

A. I mean in the inner pump column.

Q. You mean in the shaft tubing?

A. That is what I mean, the shaft tubing.

Q. Where did that water get to?

A. It went into the well; as the pump was raised, the water that was in the inner casing lowered and went into the well.

Q. The water in the tube line?

(Testimony of W. A. Doble, Jr.)

A. In the protective tube.

Q. How did it get into the well, what was its outlet?

A. I imagine it went through the runner. I don't know. I could not see that. There was a lowering of pressure, because you could see the grease going in between the shaft and the bearing—you could see grease going in there, being drawn in.

Q. What would be the likely means of outlet for the water in the shaft tube?

A. I could not tell you.

Q. How did you know that was a defendants' pump?

A. From all appearances it was the same as what I have seen here.

Q. How much of it did you see?

A. I saw the head and about one and a quarter sections.

Q. You saw the section that connects immediately with the pump head? [760] A. Yes.

Q. How great a length of that pump did you see?

A. I saw, I should judge, about six feet. The top head and about six feet below the surface.

Q. Didn't you see any more of the pump construction below?

A. I did not, other than what I could look down the well and see.

Q. Was that a bored well, or pit well?

A. I imagine it was a bored well; it had a casing; I am not familiar with wells in general.

Q. Do you know how deep that well was?

(Testimony of W. A. Doble, Jr.)

A. I don't know.

Q. Do you know where the water level was?

A. I do not.

Q. Do you know how far the water level was below the surface? A. No.

Q. Do you know what the length of the pump column was? A. I do not.

Q. You then, of course, would not know how many tube sections there were? A. I do not.

Q. You would not know whether the tube sections and the pump discharge column were submerged, would you?

A. No, I don't know whether the pump was submerged—what portion of it was submerged?

Q. Of course, you would not know whether that pump was a Western Well Works pump or not, if you could not see the drain tubes or see the lower sections?

Mr. WHITE.—I think the defendants' witness admitted this morning that was one of the Western Well Works pumps which had been substituted for the United Iron Works pump; if there is any dispute about it we can go ahead and prove it.

Mr. TOWNSEND.—I want to know what this witness knows.

Mr. WHITE.—That is immaterial, whether the witness knows [761] it, or not. If you dispute the fact, we can prove it. If it is a fact, we can save time by having it admitted.

Mr. TOWNSEND.—I want to get his testimony.

Mr. WHITE.—Q. Assuming that was a West-



(Testimony of W. A. Doble, Jr.)

ern Well Works pump, and had the drain tube down there, would not water likely have gone out from the interior tube shaft as you raised the pump through the drain tube?

A. If those drain tubes were connected clear from the inner tube to the outside of the well, it would have, and if they were not stopped up—the water from the inner tube would have gone into the well.

Q. Had you any reason to suspicion that that pump did not have the drain tubes?

A. I knew nothing about that.

Q. I am asking you, did you have any reason to suppose that that pump was not provided with drain tubes which would function as they are supposed to function?

A. No, I did not see that.

Q. That is not an answer to my question.

The COURT.—He answered “No.” That is a direct answer to your question?

A. I don’t know.

Mr. TOWNSEND.—Q. Then would not the likelihood be as that pump was raised that the water would flow out through these drain tubes as one medium of exit?

A. If those tubes were, as I have stated, connected to the inner tube and to the well, as the pump was raised, the water in the inner tubing would flow out into the well.

Q. Through these drain tubes?

A. I don’t know whether it would go through these drain tubes, or other drain tubes, but if they were clear and there were no other openings it might go through these. I could not say positively,

(Testimony of W. A. Doble, Jr.)

because I could not see it. [762]

Q. We are trying to use common sense now. We will assume that that pump that you saw down there was identical in construction with either this model V or Plaintiff's Exhibit 4, both of which exhibits show the drain tubes, which in the model V are marked 28. If that casing had water in it and you raised it, does not common sense teach you that the water would flow out of these drain tubes into the well? A. I do not see what would—

Q. (Intg.) Can't you answer my question, "Yes" or "No"?

A. Yes, I believe water would flow out of that if it was raised.

Q. Now, supposing these drain tubes are there, how did the water get into the tubes in the first place?

A. I imagine that it would be just the reverse action, from the well, and it went into the tube and through that little bearing there, into the inner casing.

Q. And any other means of communication which might be between the discharge water and the interior of the tube?

A. Yes, any other ones that might be there.

Q. Did you notice that pump that you saw there on the Selby ranch having any means of lubrication at the pump head? A. I did.

Q. What was that means of lubrication?

A. The part that I saw was not exactly like this; the construction was slightly different; but the fundamentals were about the same. They had a

(Testimony of W. A. Doble, Jr.)

drill and tap hole in the upper end of this top bearing, and apparently there had been a pipe screwed on there; it was off when I saw it, but this top part was filled with grease, and undoubtedly that was how they were feeding down the shaft. I saw no signs of oil.

Q. Who took off that pipe?

A. I don't know who took off the pipe. I was not there when it was taken off.

Q. Do you know when they first started to pull that pump? [763]

A. I was there when they first started to lift the pump from the well.

Q. But other members of your party were there ahead of you?

A. There was a wrecking crew there before I was there.

Q. A Layne & Bowler wrecking crew? A. Yes.

Q. Now, you pulled one section; how many feet did you say you pulled out of that pump?

A. Approximately six feet; I could not say exactly.

Q. How many sections did you examine?

A. What do you mean?

Q. How many sections of the tubing, of the shaft-enclosing tubing, did you examine?

A. I examined one on the ground, because we only took one out of the well.

Q. You examined but one? A. But one.

Q. What was the interior condition of that tube?

A. It was very greasy, and after rubbing, taking that grease out with a rag, the interior of it looked about the same as the interior of this right here.

(Testimony of W. A. Doble, Jr.)

Q. You say "very greasy." What do you mean by that,—how greasy?

A. That is very hard to answer.

Q. Was it a film?

A. No; it was a good thickness of grease, about a quarter of an inch—I did not measure it, but it was somewhere in that vicinity; it was a good quantity of grease.

Q. Was it uniform, or in lumps here and there?

A. I don't remember exactly. I don't think it was exactly uniform.

Q. Approximately, what did it appear to you like?

A. It was not in large lumps; it would be pretty smooth, you might say, that is, it was not in large projections out into the tube.

Q. Was there any clearance between the grease layer and the interior shaft? A. Yes.

Q. There was a clearance there? A. Yes. [764]

Q. How much clearance was there?

A. I could not answer that question.

Q. You did not measure that?

A. No, I did not measure that.

Q. Did you see anything there that would, to your mind, interfere with the action of lubricant, oil, dropped in at the top bearing and passing from bearing to bearing through that shaft-encasing tube?

A. First of all, there was that little top cup that was filled with grease; I could not say that any oil could get through it.

Q. You say something was taken out of there. I am assuming oil would be fed in there at that top tube bearing. Did you observe anything that would

(Testimony of W. A. Doble, Jr.)

create an obstruction or interpose an obstruction to the free passage of oil fed into the top, down the shaft, bearing to bearing, through that shaft-enclosing tube? Answer my question "Yes" or "No."

A. Yes.

Q. What did you see that would interfere?

A. The grease on the shaft, grease on the casing.

Q. You said there was a clearance between the shaft and the film on the interior of the casing, did you not?

Mr. LYON.—I object to that as not a correct statement of the witness' testimony.

Mr. TOWNSEND.—He said there was a clearance.

The COURT.—If that is not a correct statement of what he said, he may make the correction. I understood him to say there was a clearance.

A. I did not look at it in position with the tubes and the shaft in place.

The COURT.—Then you did not mean to say that when the shaft was in there was a clearance between the shaft and the film?

A. I believe there would have been, from the very [765] best evidence that I could give. I actually did not see it that way.

Mr. TOWNSEND.—See if you can answer my question: I am trying to put a fair question to you.

The COURT.—As I understand, the question is if oil is introduced at the top by an oil device, would it, in your judgment, follow on down the shaft through the various bearings, and if not, why not?

A. I don't think it would have.

(Testimony of W. A. Doble, Jr.)

Mr. TOWNSEND.—Just answer the rest of the Judge's question.

A. Because the grease on the shaft and on the tubing would seal the small passage tubing.

Q. You have stated that there was a clearance between the tubing and the exterior of the shaft, even in spite of the oil film on the interior of the tube, haven't you?

Mr. WHITE.—He has stated that was his belief.

The COURT.—He has so stated, according to his belief.

Mr. TOWNSEND.—Q. Would that offer a natural conduit for the gravity flow of a mobile fluid, mobile liquid?

A. That is, in that section it would, but it would not to all the bearings in the well.

Q. Did you observe the nature of those bearings?

A. I did.

Q. Did they have the spiral groove in?

A. They did.

Q. From your experience and knowledge as an engineer, do you know what the action of that spiral groove would be on any matter on the shaft coming down in contact with the bearing?

A. I believe I do.

Q. What would it be?

A. It would help to distribute the lubricant that was in that groove.

Q. And act in a worm fashion, like a screw propeller, to carry [766] whatever was on that shaft down through it, would it not?

A. To a small extent.

(Testimony of W. A. Doble, Jr.)

Q. Have you ever made any tests on the screw action of a rapidly-rotating shaft in a groove bearing?

A. I don't understand your question.

Q. Read it.

(Last question read by the reporter.)

A. No, I have not.

Q. Very well. You admit, though, that it would have the tendency to carry the matter through?

A. Very slight.

Q. Well, now, having gotten it through, would there below, and as far as your observations went, be an opportunity for a fluid lubricant to reach the next bearing?

A. I think it would meet the same hindrance right in the next bearing.

Q. But if it got to the bearing, that lubricant would perform its function, would it not?

A. It would if it got there.

Q. Can you state what the action of a rapidly-rotating,—a shaft rotating 1100 or 1200 R. P. M., would be on any lubricant placed upon it, or flowing upon it?

A. It would tend to throw it off.

Q. By centrifugal action. Wouldn't that be an explanation of the accumulation of the grease or oil that you saw in the interior of the tube?

A. Yes, partially so.

Q. Did you have an opportunity to observe that pump in action?     A. I did not.

Q. Who was in your party that visited the Sherrer ranch the other day?

A. There was Mr. Lyon, Mr. White, and Mr. Doble,

(Testimony of W. A. Doble, Jr.)

Sr., and myself, and the rest of the crew.

Q. Was Mr. F. H. Hermann, vice-president of the Layne & Bowler Company present?

A. I beg your pardon, he was there also. [767]

Q. Who was it in your party that stated to Mr. Sherrer, the owner of that pump, that you had an order signed by this court permitting you and your party to pull that pump, and that if he did not permit that pump to be pulled the sheriff would come and do it?

Mr. LYON.—We object to that question as, first, not cross-examination, as assuming a fact not in evidence, and on the further ground that it is incompetent, the witness not having testified that he knows of any such thing, and we deny the inference in the statement.

Mr. TOWNSEND.—I only wanted to bring it up here so that the court might decide whether the dignity of the court has been offended.

The COURT.—We are not interested in that at the present time. It is introducing a collateral issue.

Mr. WHITE.—I can assure counsel that nothing of that kind took place.

Mr. TOWNSEND.—We have been assured to the contrary, your Honor.

The COURT.—You might try the issue out in the corridor.

Mr. TOWNSEND.—Q. You concluded that the water got down the tube line when the pump was lifting, evidenced, you say, by the air bubbles that passed around the top tube bearing?

A. I don't understand the question.



(Testimony of W. A. Doble, Jr.)

Q. Read the question, Mr. Reporter, and if it is not clear I will make it clear.

(The last question repeated by the reporter.)

A. The evidence of the reduced pressure in the tube line was from the grease being drawn in at the top bearing.

Q. And that was due to the lowering of the level of the water in the tube line?

A. In the inner tube line. [768]

Q. Now, Mr. Doble, if water would flow down the tube line, wouldn't oil flow down the tube line, too?

A. I couldn't see where that water was.

Q. Please answer my question. A. It would.

Q. That is, it would find exit at the same place as the oil, would it not? A. Presumably it would.

Q. And if that exit was at these drain tubes, No. 28 in model V, the oil would find the same outlet, would it not? A. Presumably it would.

Mr. TOWNSEND.—That is all.

Redirect Examination.

Mr. WHITE.—Q. Did you examine one of these spiral bearings, or grooves in the bearings?

A. I did.

Q. What did you find with regard to its condition?

A. It was filled with grease.

**Testimony of W. A. Doble, for Plaintiff (In Rebuttal).**

W. A. DOBLE, called for the plaintiff in rebuttal, sworn.

Mr. LYON.—Q. Please state your name, age, residence and occupation.

(Testimony of W. A. Doble, Sr.)

A. William A. Doble; 52 years old; residence, 190 Seacliff Avenue, San Francisco; occupation—you mean my profesion—hydraulic and mechanical engineer.

Q. In connection with that profession, with what companies have you been connected, and in what capacity?

Mr. TOWNSEND.—In order to shorten time, we admit Mr. Doble is a qualified mechanical and hydraulic engineer, and we will wait until he gets to some specific point which may require more knowledge of his qualifications on that particular subject.

The COURT.—Very well. [769]

Mr. LYON.—Q. You have heard the testimony of your son, Wm. A. Doble, Jr.? A. Yes.

Q. You were present on Sunday last, and also on Monday, when trips were made, first to the Palo Alto ranch of Sherrer, and then to the Selby ranch?

A. Yes.

Q. Were you present while the pump at the Selby ranch was pulled last Monday?

A. I was present during the pulling; at the time we got there the pulley was off, the lubricating pipes were disconnected, the top pulley bearing was off; the regular pump head and the pump was intact, and they were setting up the tripod or derrick to lift the pump when we got there.

Q. Please go on in your own way and explain what you observed with regard to that pump at that time, particularly with regard to the shaft-enclosing casing, and the method of lubrication?

Mr. TOWNSEND.—If your Honor please, this is

(Testimony of W. A. Doble, Sr.)

a mere duplication, which I think is wholly unnecessary, going into the detail of what these parts show.

Mr. LYON.—If you are willing to concede that Mr. W. A. Doble, Jr.'s, testimony in that regard is correct, we will pass along.

Mr. TOWNSEND.—I don't know what you are going to prove by this witness, any more than what Mr. Doble, Jr., has testified to.

The COURT.—Perhaps we can get at it in this way: Will you admit that this witness will testify substantially the same as his son did, who was just on the witness-stand?

Mr. TOWNSEND.—Yes.

Mr. LYON.—Q. Mr. Doble, are you familiar with the patent in suit?     A. Yes.

Q. Have you examined, and are you familiar with—

The COURT.—I intended to ask the preceding witness a [770] question; perhaps I might ask this witness. There is no other way of lubricating this pump except the one suggested, that is, by the lubricant going through this spiral orifice or groove?

A. It is not a spiral groove, it is a helical groove, and at the top of this upper bearing, it is chambered out, and connected with that chamber is a hole threaded out for apparently an oil cup, and the oil feeds from that down through the bearings; the only other source of lubricant would be the lubricant that was put in the pump at the time it was installed.

Q. What I am trying to get at is this: If this groove becomes stopped up so that it will not function, do the bearings become dry?

(Testimony of W. A. Doble, Sr.)

A. If the groove becomes stopped up so that it would not function sufficiently, the bearing would become dry, but, due to the rotation of the shaft, and this helical groove, the rotation of the shaft gradually draws the grease out of that groove and distributes it over the surface of the bearing; but its real function is to prevent too rapid a flow of grease through it. If you had a vertical grove, the flow would be too rapid; but by the helical groove, the distribution is much more complete; it serves the purpose of preventing too rapid a feed of the lubricant.

Q. Your idea is in this particular device this groove would not become stopped up so that it would not function?

A. Oh, no, I would not expect it to, not unless the grooves were in very bad condition. Each one acts as a packing gland, because it has that grease, and the grease is constantly provided for the lubrication of the shaft, which means simply a film of grease between the rotating element and the stationary element. Now, you will appreciate that this stationary element is grooved; the helix is on the stationary element, [771] whereas if it were on the rotating element then it would act like a propeller or any other screw action, and pull the lubricant through more rapidly. But the grooves being the static element, the stator, as it were, act as distributors and insure against the lubricant going through on one side without lubricating the entire bearing.

Q. Is it for impeding rather than accelerating the passage of the lubricant?

A. I should say my own opinion of the thing is that

(Testimony of W. A. Doble, Sr.)

a helical groove, from experiments I have made, does retard, as compared with a longitudinal groove, where it would run through with the helical element rotated, it would accelerate the flow through; but the only thing that you have to accelerate the flow is that frictional contact between the rotating shaft and the surface of the grease, whereas, to overcome that, there is a static condition of a very much greater surface, due to the groove in which the grease is poured. Then, of course, to assist in going through, you have the force of gravity. The prime object, in my opinion, is to assure a more perfect distribution of the lubricant on the shaft surface.

Mr. LYON.—Q. Have you read and are you familiar with Defendants' Exhibit "W," the Halstead patent? A. I have read the Halstead patent.

Q. And with Defendants' Exhibit "G," the Eisler patent and Defendants' Exhibit "H," the Crannell patent?

A. I have read both the Eisler and the Crannell patents.

Q. And have you examined and are you familiar with Plaintiff's Exhibit 4, the so-called Anderson pump? A. I have and am.

Q. Will you take the patent in suit and very briefly state what therein you find with regard to lubrication, enclosure of shaft bearings, and alignment of the bearings, and very [772] briefly compare those features with the features, in so far as they will compare, with the Halstead patent, and Crannell patent, and Eisler patent, and with Plaintiff's Exhibit 4, the Anderson pump.

(Testimony of W. A. Doble, Sr.)

Mr. TOWNSEND.—That questions, calling for a comparison, is objected to because it is the function of the Court to make the comparison. It is all right for him to analyze each of these patents from his own viewpoint, but it is for the court to draw its own conclusion on a comparison of them.

The COURT.—I suppose the purpose is to assist the court.

Mr. LYON.—I would like to say, in this connection, that I am offering the testimony of this witness as to the prior art, of course subject to your Honor's ruling when ultimately made on the question of estoppel.

The COURT.—Yes.

A. Referring to the patent of M. E. Layne, No. 821,653, the patent in suit.

Mr. LYON.—Make your explanation in regard to that short, as to the features I have referred to, because the patent has been referred to in detail before.

A. With reference to these points, the patent provides in combination a shaft-enclosing tube associated with the bearings, forming a conduit to furnish lubricant to the several bearings in series. It further provides a protection, in combination with the bearings surrounding the shaft and protecting the bearings and the shaft from the action of the water being pumped and any sand or detritus carried by the water. Furthermore, this combination provides a series of shaft-supporting and aligning bearings placed at suitable intervals between the ends of the shaft, making one combined structure, being a pendant [773] power transmission to transmit

(Testimony of W. A. Doble, Sr.)

power from the surface of the ground or the top of the well to a pump located within the bore of the well. That is, it provides in this combination a support and an alignment of the bearings, a lubricating system for the bearings in series, and a protection of the shaft and bearings against the corrosive action of the water or any sand or detritus carried by the water.

The next patent is that of Crannell. In Crannell I find a pump that is not designed for a bored well; it is not a pendant structure, being supported in an open pit, on the bore of the pit, and there are no shaft-supported or protected bearings in the sense of the Layne patent. The only bearing shown is below the impeller, and is marked 9, and is subject to the action of the water in the well when being pumped and any sand or detritus carried. There is not shown or indicated any means of lubrication of that bearing. Were a lubricant poured into the pump stock, as it is called, it would not reach any bearings of the pump. The pump does not involve a series of shaft-supporting and aligning bearings, protected against the action of the water or sand or detritus carried by the water, nor does it provide a lubricant conduit for the bearings. It is an open pit construction for low lifts.

The Eisler patent, Defendants' Exhibit "F," is a low-lift water elevator, and the bearings of the shaft, that is, bearings 18 and 14, are subject to the action of the water. The pump differs entirely from the principles and invention of Layne in that it is not a pendant structure; it is arranged to be supported on

(Testimony of W. A. Doble, Sr.)

the floor of an open flume or canal; the lower bearing is submerged directly in the water, it is subject to the action of the water, and any sand or detritus carried by [774] the water. It is provided, however, with a rotating inlet in an effort to partially protect this bearing. The bearing No. 18 is located in a rectangular wall above the runner, and there is no means, however, to feed lubricant through this rectangular wall, nor any way to protect this bearing No. 18 from the action of the water, as the pressure of water would force the water through the bearing; the lubrication system is entirely different; instead of being a series lubricating system, and carrying the lubricant from bearing to bearing, step by step, down through a tube, there is a parallel system wherein there is a vertical tube with branch pipes to the center of each bearing, and the lubricant would be expected to feed into these several bearings. In practice, we have found that will not work, because sometimes one bearing will take all of the oil, and the other bearing will not get none, particularly, the bearing at the bottom would get the greater portion of oil. The pump is different in principle, and mode of operation, and the result secured, from the Layne patent. The central well, which is stated in the patent would be free from water, could not possibly operate that way, as the water would go up through the bearing and would quickly fill this central well to the height to which the water was being pumped.

The COURT.—The water would pass out where?

A. Right out through this bearing. There is no



(Testimony of W. A. Doble, Sr.)

pressure of grease on top to retard it, because the oil simply comes in on the side and whatever loosens would pass up and the central well would fill up. It is, further, not a pendant structure, and could not be inserted in a bored well.

The Halstead patent, Defendants' Exhibit "W," has in a pendant pump construction, suitable for bored wells, a series [775] of shaft supporting and aligning bearings, spaced at intervals, suitable intervals, between the ends of the shaft. Associated with the bearings is a tubular structure, which would thereby protect the shaft and bearings from the action of the water being pumped, and any sand or detritus carried by the water. And this tube provides a conduit for lubricant to the several bearings in series, and embodies in this structure the three essential elements forming the combination in the Layne invention.

Mr. TOWNSEND.—If he is going to compare the plaintiff's patent with the defendant's structure, that is not proper rebuttal. That was a part of their opening case. It opens up a great field on which we have had no opportunity to know their views. They have put in their opening case, and made their comparison with the Layne patent, and now this is not rebuttal.

Mr. LYON.—That would be true to a great extent, were it not for this fact; the question asked the witness is not solely as to the Layne patent and the alleged infringing structure, but it is a comparison of those two together. They are asserting that they are operating under the Halstead patent,

(Testimony of W. A. Doble, Sr.)

and I want the witness to answer particularly, after comparing the Layne patent and Plaintiffs' Exhibit "4," which the Halstead patent refers to. In other words, their contention is they are operating under the Halstead patent, and I am going to point out the differences between this structure and how it approximates the Layne structure, and where it differs from the Halstead are the very features of the Layne patent.

Mr. TOWNSEND.—A comparison is proper enough if he wants to compare defendants' structure, Exhibit "4," with the Halstead [776] patent, but it is not proper at this time and at this stage of the case to compare that structure which has been introduced in the *prima facie* case to prove infringement with the Layne patent in suit.

Mr. LYON.—Limit your comparison, as far as the Layne patent in suit is concerned, and Plaintiff's Exhibit "4," to the flow of lubricant in the column, in the encasing column, and particularly with relation to any circulatory system, so-called, or stagnant pool system.

Mr. TOWNSEND.—I make the same objection, because it is part of the *prima facie* case. Any comparison between that structure which is introduced in the *prima facie* case and the patent in suit should be made, then, and we should be given an opportunity to answer. We have answered everything that they have put forward.

The COURT.—Sustained.

Mr. LYON.—Q. Mr. Doble, calling your attention to the Halstead patent, Defendants' Exhibit

(Testimony of W. A. Doble, Sr.)

“W,” what is the function and mode of operation of the drain tubes, 28? What do they serve? What purpose do they serve, and how do they operate?

A. Reading from the Halstead patent, Defendants’ Exhibit “W,” page 2, commencing with line 53:

“It will be observed that channel 27 is placed a short distance above the lower end of bearing 17. This is done so that the lubricating emulsion will traverse the greater portion of the bearing before draining away. That portion of the bearing below channel 27 will not be lubricated, because the upward pressure of the water being raised will tend to force a small amount of water in the direction of the arrow upward through the bearing, until the channel, 27, is reached, where it will [777] be drained away through auxiliary conduits, 28.”

That would be the action.

Q. What effect, if any, would that action have toward excluding water or sand from the tube enclosing casing during the operation of the pump?

A. That would be the mechanical equivalent of a stuffing-box, or any other form of resistance for which a resistance-box is commonly used.

Q. Why?

A. Because the water, being forced up by the pump due to the pressure—and I am now speaking of a multi-stage pump—in passing through the lower half of that lower bearing, and until it reached the chamber, 27, which has free opening into the well

(Testimony of W. A. Doble, Sr.)

in the port, 28,—that water would freely discharge back into the well; in other words, would be short-circuited and would not be forced, as the patent herein states, up into the upper part of the bearing which forms the lower end of the shaft-encasing column, and therefore that acts as an interference, or as a packing gland and protects the shaft from water being forced in there during the operation of the pump, and carrying with it sand or grit.

Q. In this respect, how does Plaintiff's Exhibit "4," the Anderson pump, correspond in its action with the Halstead patent description, and what evidence, if any, is there in Plaintiff's Exhibit 4 of such action?

A. Referring to Plaintiff's Exhibit 4 I find the channel, 27, which is shown in the patent drawing, being placed between the ends of the lower bearing, or the bearing immediately above the pump bowl, and from that chamber I find the two conduits, 28, and on examining the shaft of this pump and its bearings, it shows clearly that where the shaft went through the upper bearing it was protected from grease, and the lower part from this point down shows the corrosive [778] action of the water being forced through the bearing. Now, in pumping under high pressure, the water is forced up through this bearing into chamber 23, and is then short-circuited back into the well, where there is low pressure through the channel 28, and, therefore, has not the energy necessary to force itself past the grease in the upper part of the bearing above the chamber 27 and into the shaft tube, and the worn,

(Testimony of W. A. Doble, Sr.)

shiny appearance shows that the shaft in that lower bearing was thoroughly protected, and below that, where the water was forced through the lower half of the bearing it is corroded. The action is just as set forth in the Halstead patent, and, therefore, is the mechanical equivalent of a packing gland. This shaft being laid in position, shows where the water stopped, and then the bowls came on, and the runner is put on the shaft below.

Q. Have you examined the continuation of this shaft above the enclosure, here, as to its condition?

A. I have examined the shaft of Plaintiff's Exhibit 4 above the lower bearing.

Q. What kind of deterioration, if any, by sand or water, did it show?

A. None, whatever. The shaft is in thoroughly good order, clean, free from rust, and covered with lubricant or grease.

Q. What, if anything, does that indicate as to the correspondence of this structure with the description of the Halstead patent, as to the possibility of the entry of water at the joints of the shaft-enclosing casing upon the hubs of the bearings, and the free use of water lubrication in that manner?

Mr. TOWNSEND.—There is no proper foundation laid for what takes place in practice, and this is not rebuttal. [779]

Mr. LYON.—What does it indicate?

The COURT.—He may answer.

A. This shows implicitly that the shaft casing formed a protection against the admission of water

(Testimony of W. A. Doble, Sr.)

and sand which would injure the shaft bearings.

Mr. LYON.—You may take the witness.

Cross-examination.

Mr. TOWNSEND.—Q. Mr. Doble, you have, as an expert, given your advice to the Court in an advisory capacity as to the differences between the structure shown in the Eisler patent and the Layne patent in suit. Now, in fairness, will you give the other side of the proposition, as to the similarities that you find in the Eisler patent and the Layne patent in suit.

Mr. WHITE.—I might say, your Honor, that that is immaterial. Mr. Doble has pointed out the differences in respect to those features forming the subject matter of this suit, so far as the Layne claims in suit are concerned. Even if these devices are similar in regard to other features that have nothing to do with this case, that is absolutely immaterial.

Mr. TOWNSEND.—It is quite material.

The COURT.—He may answer.

A. Referring to the Eisler patent, Defendants' Exhibit "F," I find really the only true similarity is the pulley.

Q. That is the best answer you can make?

A. All of the other features differ materially in the mode of operation and result, and structure.

Q. Are you influenced in your answer by the fact that this shows a square construction instead of a round construction? A. Partly.

Q. Do you consider that an essential difference?

(Testimony of W. A. Doble, Sr.)

A. When you [780] come to ask for similarities, yes, it is an entirely different structure.

Q. Would you consider that this appears to be made of wood, as against the other made of iron, that that is a true difference?

A. That would be a true difference; it makes an entirely different proposition; the question of leakage, and protection, and stability, and the fact that it is not a pendant structure.

Q. I want to get back to similarities. Just eliminate the matter of form and the matter of material of which the thing is made, and see if you cannot give us a somewhat fuller and better answer to my question, to point out the similarities that you, as an engineer, must necessarily see between the Eisler construction and the Layne patent in suit.

A. In pointing out any similarity, I would have to point out wherein it differs.

Q. You have pointed out the differences. Just confine yourself to the question of similarities.

The COURT.—I will permit you to lead him if you wish. Perhaps you could call his attention to certain features and ask if they are similar.

Mr. TOWNSEND.—Q. Referring to page 1 of the specifications, in the paragraph beginning with line 32, you find a pump casing referred to, do you not? A. What are you referring to?

Q. To the specifications of the Eisler patent.

A. The specifications of the Eisler patent, commencing at line 32, say:

“In the said drawings, the letter A, indicates the pump casing or framing, which is composed

(Testimony of W. A. Doble, Sr.)

of a bottom or base piece, 12, from the four corners of which rise standards or beams."

I will say to you there is no similarity as between that and a pump casing. [781]

Q. Just go on. "— secured to which are interior and exterior walls 4 and 7." Now, isn't this casing, 7, which is the part that appears in the model here before us, Defendants' Exhibit "X"—isn't that a discharge casing?

A. Yes, but that is not the pump casing.

Q. It is a discharge column, rather?

A. That isn't what you asked me.

Q. I am getting to the point now of comparison. Layne has got a discharge column, hasn't he?

A. Yes, every pump has.

Q. Now, this No. 7 is the discharge column, isn't it?

A. The member 7 in combination with No. 4 provides discharge ways, yes.

Q. And the interior part 4 is a casing interior of the discharge column, isn't it?

A. The box, 4, inside of the box, 7, leaves discharge ways as shown by the area here marked 3.

Q. There are four of these waterways between the outer casing, 7, and the interior casing, 4, aren't there, in a column?

A. I think what you mean is that they perform the function of water ducts, so that the water, passing up through, comes up through this space—is that what you mean?

Q. Yes, they carry the water from the impeller to the point of discharge.



(Testimony of W. A. Doble, Sr.)

A. From the impeller to the point of discharge.

Q. Now, except that this structure is square, we have a shaft which would be concentric with the inner casing, 4, and the outer casing, 7, haven't we? I am speaking in general terms, *which* I say the axis is concentric with the inner casing: Is that right? A. Referring to the model—

Q. Just answer my question.

A. Read the question.

The COURT.—He may answer the question referring to the model. Is it concentric in the general sense, or not?

A. Referring to the model, there is the shaft, which is placed [782] centrally in the box, 4, and also equally centrally in the box, 7.

Mr. TOWNSEND.—Q. Now, the specification says, beginning with line 40: "The interior walls, 4, extend upward beyond the exterior walls, 7, as in Figure 1, to prevent the water passing up the conduit 3 from overflowing into the interior of the casing or framing, A." Now, that indicates a water protection to the shaft, doesn't it?

A. You are referring strictly to that, and not in the sense of the Layne patent?

Q. I am just saying, what do these words mean. If it keeps the water out of the shaft, isn't that a protected shaft from the water?

A. In that sense I will say it was protected from the action of the water going into a central chamber.

Q. And in so protecting the shaft, it also protects the bearings which are within the casing, 4, from the water, also, does it not? A. No, it does not.

(Testimony of W. A. Doble, Sr.)

Q. Just take the condition as we see it in the Eisler patent, in this model; the bearings, 19 and 18, are inside the casing, 4, are they not?

A. 19 and 18, yes, that is, within the confines of the four walls.

Q. And if no water can enter the casing 4, obviously it cannot get at anything in the casing 4, and, therefore, it cannot get at the bearings, 18 and 19; isn't that true? A. You are not right.

Q. Wherein am I wrong?

A. The bearing, 19, is materially above the height of the flow of the water being pumped.

Q. The water won't get to it, will it?

A. It is above it, it could not get to it.

Q. Very well. It is inside the confines of this inner casing, 4, too, isn't it?

A. It is at the top end, but it is not the [783] casing, 4, that protects the bearing from the water being pumped.

Q. I am talking about it laying within the confines of the walls of the casing.

A. It does at the top end, yes.

Q. And the bearing, 18; look at that; what will you say as to that, the bearing, 18?

The COURT.—That is 18 on the model?

Mr. TOWNSEND.—On the model. The same number applies to the model and drawings of the patent.

Q. That bearing, 18, is also within the confines and within the enclosure of the casing, 4, is it?

A. Leave out "also"; it is within the confines of the enclosure of the casing, 4.

(Testimony of W. A. Doble, Sr.)

Q. I accept the amendment. Bearing 18, would, therefore, be protected from the water?

A. Not at all.

Q. What is the reason for it?

A. The simple reason that bearing 18 is not protected, there is nothing there, and the water in the pump chamber will pass up through the bearing, 18, and the chamber, 4, will fill with the water up to the height the water is being pumped?

Q. What is your authority in the patent when he says he is keeping out the water from the interior of the casing?

A. From 40 years' experience, I know you cannot do it that way.

Q. Then you disagree with the patentee, do you?

A. The patent shows on its face that the bearing is not protected from that water.

Q. Taking the specifications and the drawings together, does not the patent show in the few lines that I read there, that the water is kept from getting into the interior of the casing, 4?

A. It might say so, but it does not do it.

Q. You disagree with the written words, then?

A. I disagree with the fact.

Q. I am talking about the written words of the patent. [784]

A. You may put it that way. I know from my own experience that the water will go through there. There is no way to keep the water from coming up.

The COURT.—Where is the language that you rely on, Mr. Townsend?

(Testimony of W. A. Doble, Sr.)

Mr. TOWNSEND.—In column 1, page 1, “The interior walls, 4, extend upward—”

The COURT.—What line?

Mr. TOWNSEND.—Line 40: “The interior walls, 4, extend upward beyond the exterior walls, 7, as in Figure 1, to prevent the water passing up the conduit, 3, from overflowing into the interior of the casing or framing, A.”

Q. If that was filled with water, that statement, of course, would be surplusage; it would have no meaning.

A. But that would only protect it from that end. The water I am speaking about comes through the lower end; the water cannot come from the top end, because the orifice of discharge is materially below the top surface.

Q. Can you show anything in that patent which says the water comes in from the lower end?

A. I did not say there was anything in the patent to that effect. I am answering, Mr. Townsend, the points you raise with me, and that speaks about the flow of the water into the top end.

Q. So that no water can pass in from overflowing into the interior of the casing or framing, A?

A. Perfectly, but from the top end; that is what it is limited to.

Q. The patent speaks for itself in regard to that. You find nothing, however, by which there is any disclosure in the patent of means for admitting water at the lower bearing into the interior of the casing, 4, do you? Answer “Yes” or “No,” as to [785] the disclosures in the patent? A. Yes.

(Testimony of W. A. Doble, Sr.)

Q. Where do you find any statement, or one word in the specifications that says anything of that sort?

A. You are referring me to the disclosure; to me the drawing offers a more complete disclosure than the words.

Q. You are relying on your interpretation of that drawing then?     A. Of the drawing.

Q. You are ignoring the specification, are you?

A. No.

Q. I am asking you where you can show me a word in the specification which supports your statement that water can enter that casing from the bottom, and yet they want to keep it out of the top.

A. You asked me for a disclosure, and the drawing is as much a disclosure to me as the words.

Q. I am asking you to point out the description of such a possibility.

The COURT.—Gentlemen, I think we are taking a good deal of time on this.

Mr. TOWNSEND.—I think so.

The COURT.—When it comes to interpreting the words of the patent, perhaps that will have to be done with the assistance of counsel.

Mr TOWNSEND.—I will pass on.

The COURT.—It is barely possible that the language to which you refer means that when the water is lifted to the proper height that it is drained into a diverging trough on the other side, rather than drained into the interior of the pump.

Mr. TOWNSEND.—It would have no function

(Testimony of W. A. Doble, Sr.)

inside, that is perfectly obvious. I was testing out the witness' fairness as an expert on propositions of that sort.

Q. In referring to the Halstead patent in evidence, you took [786] occasion to read from the bottom of Column 1 of page 2, wherein it describes how any water that passes up from the top pump bowl or from the space immediately above the top pump bowl, and the sub-shaft, is shunted off to the port, 28; you have given the Court the impression that that is the sole function of the port, 28. Can you find anything else in the patent referring to the function of those ports, 28, or drain tube, 28?

The COURT.—Does not the patent speak for itself on that? I did not understand the witness to testify that that was the only purpose of those vents or ports, as shown by the patent. I understood him simply to say that that was one of the purposes. Am I right?

A. You are correct, your Honor, because that part of the patent seemed to me to explain more clearly the main functions of these conduits, 28.

Mr. TOWNSEND.—Q. May I ask you to read the part of the column, beginning with line 70, down to line 103, on page 2?

A. "It is of course well known that clear water is an excellent lubricant but the tendency of the shaft to corrode renders its use objectionable when used alone. The use of oil alone is highly objectionable as it contaminates the water to such a degree as to become a nuisance when fed from the top or

(Testimony of W. A. Doble, Sr.)

bottom, and requires a more or less complicated system of pipes when fed directly to each bearing, besides adding considerable to the expense of operating. I obviate these objectionable features by using an oil emulsion as a lubricant as above described, thereby providing a cheap lubricating medium, preventing corrosion of the shaft, not contaminating the water delivered and, on account of the constant flow of water through the bearings, providing an efficient cooling system for said bearings. [787]

"It will be readily seen, of course, that since the conduits are connected to the well proper by channel 27 and auxiliary conduits 28, the water in said conduits will be drained to the level of the water in the well when the pump is in operation, and consequently there will always be a movement of the water into said conduits, down the shaft, through the bearings and out through auxiliary conduits 28. The draining of conduits 8, 8a, etc., in this manner also conduces to economy by obviating the necessity of providing a stuffing-box at the top bearing."

Q. You have pointed out, in connection with Plaintiff's Exhibit 4, the Anderson pump, the function of the drain tube with respect to the entry of water upward around the shaft. I understood you to say that you found the same functions present of these drain tubes taking away any water leakage that came upward around this section surrounding the shaft, into the little chamber, 27, and out 28. I was correct in that, was I not?

A. I was reading from page 2 of the patent.

Q. You found present in this Plaintiff's Exhibit

(Testimony of W. A. Doble, Sr.)

4 the function of the drain tubes with respect to the matter that you first read beginning on page 2 of the Halstead patent, lines 63 to 65? A. Yes.

Q. You found that function present?

A. Yes, I found that the elements as set forth in that part of the patent are in this Plaintiff's Exhibit 4.

Q. Now, referring one word more to the Eisler patent, you criticised the practicability of it, in that it used a system of oiling by means of pipes whereby certain bearings might get more oil than other bearings. Am I right in that?

A. I did not criticise it. I simply pointed out the operation. [788]

Q. You pointed out that that was an objection to this method of lubrication in Eisler by using these pipes, the fact that some bearings would get more than others?

A. A material difference in the system is that that is a series lubrication and this is a parallel lubrication.

Q. I am talking about the Eisler.

A. The Eisler is parallel, whereas the Layne patent—

Q. I am not talking about the Layne patent. I am talking about the criticism that you leveled at the Eisler construction.

The COURT.—He so stated.

Mr. TOWNSEND.—Q. If you have a conduit delivering to different levels, cannot you arrange the delivery of lubricant to the different levels by using pipes of a different diameter?



Mr. LYON.—That is objected to as immaterial; that is not what the plaintiff or defendant do, and it is merely argumentative, and will shed no light on the question of difference between parallel and series lubrication.

The COURT.—I think I shall let him answer, in view of his criticism of that system, or of his suggestion that it was objectionable.

A. Theoretically, you could; practically, you could not; it would not be reliable. We found that out in practice.

Mr. TOWNSEND.—That is all.

Mr. LYON.—No redirect examination.

If your Honor please, the plaintiff has taken in rebuttal the deposition of William Clasmann. I will not take the time, unless counsel insists, or the Court, to read that deposition, if it may be considered as read and before the Court. I will simply state what it shows. It shows that Mr. Clasmann was the chief engineer of the Pabst Brewery at Milwaukee at the time of the installation or attempted installation of the Byron [789] Jackson pump which is supposed to have been a completion of the invention of Byron Jackson, which is pleaded as a prior invention, antedating Mr. Layne; and Mr. Clasmann's deposition was taken to show that, as a matter of fact, what was put in at the Pabst Brewery in the way of alignment and lubrication system was not successful, was taken out and was abandoned at that time, so that it cannot, itself, be a completion of the invention, and they must prove some other completion; the point being that an in-

vention is not complete in the eyes of the law until either an allowable application has been filed in the Patent Office, showing invention—by “allowable” I mean that the necessary papers, in due form have been filed—not allowable in the sense of allowed or not—that being a constructive reduction to practice, a constructively completed invention as of that date; or the inventor must actually build and put an embodiment or machine embodying the invention into actual use sufficiently to demonstrate its success. The deposition of Mr. Clasmann shows that with the construction they had at the Pabst Brewery in Milwaukee in 1904 it was unsuccessful, and that the shaft-enclosing casing was entirely removed; they put in another system of bearings. That is the history of that installation. I call your Honor’s attention to the fact that he produced the drawings of what they substituted for the Byron Jackson attempt, and his deposition shows absolutely that while there is no pretense, according to the Meade deposition and Byron Jackson’s own letters, that there ever was an installation, or, in other words, a reduction to practice of this alleged invention prior to that time, and although Layne’s application was filed on April 28, 1903, they made no attempt to make any other installation than this [790] installation at the Pabst Brewery until the fall of 1904; so that the diligence required by law would be entirely lacking. And the Clasmann deposition shows that the defendant in this case called the witness Clasmann from Milwaukee to Madison, Wis., to testify on their behalf; they in-

terviewed him in a hotel, adjourning the taking of the Meade deposition with my consent, to take Mr. Clansmann's deposition, brought him over, and then said they would go ahead without his deposition, and ran him out of town—I say ran him out of town; they dismissed him and sent him back to Milwaukee, after finding out that his story would not jibe with their theory. They sent him back to Milwaukee and requested him not to communicate with the plaintiff. We subsequently got his deposition as to the actual facts in regard to that installation.

Mr. LOFTUS.—If your Honor please, on that proposition I was present there in Madison. We had stated in our notice we would call this man Clasmann, because we had been informed that he was an engineer for the Pabst Brewing Company, and must have known of the Pabst installation, and must have known of the success of that installation, because the Pabst Company ordered three more of the pumps immediately after the installation of the first one. Therefore, we gave notice we would take the deposition of Mr. Clasmann before we left San Francisco and before we could get back there to Milwaukee and put him on the stand this same representative of the plaintiff corporation, Hermann, or Harmon, had preceded us—

Mr. LYON.—If your Honor please, I did not intend to make an argument.

Mr. LOFTUS.—This is shown in the record.  
[791]

Mr. LYON.—If you want to misstate the testimony, all right.

Mr. LOFTUS.—He had preceded us to Milwaukee, and had interviewed this man Clasmann, so that when we arrived there Clasmann's testimony was not at all in accordance with the facts as previously transmitted to us; necessarily, we could not call him and impeach our own witness. We had to waive his testimony, and rely upon other testimony to show that the Pabst installation was a success; while it is true that on some of these pumps the casing surrounding the shaft was removed, that was because they had to abandon the use of oil after 90 days, because the lubrication that was fed down to those bearings entered the water in the well; that water was used for washing beer kegs, and the mixture of that oil and the water used for washing beer kegs—the oil remained in the kegs and interfered with the Pabst Brewery product; but the pump was operated for 90 days under a 90-day guarantee, was accepted, and was paid for, and thereafter three other pumps were ordered from Byron Jackson Iron Works, of San Francisco. They were installed, as were other pumps in and around Milwaukee.

Mr. LYON.—Clasmann's deposition also shows that while they ordered three more pumps, the order was for the centrifugal portion, not for the shafting or bearings, and that they never were assembled with the shaft-enclosing casing at all; they used open bearings in the well, and did not use anything that they got from Byron Jackson, except the

(Testimony of W. A. Doble, Sr.)

pump proper. When we say pumps, we must not get confused in this case, because the pump proper is the runner and bowls in the centrifugal portion. That is a matter that I called your Honor's attention to in the opening, that this invention did not appertain to an invention, of an improvement in a pump, but it was a [792] power-transmitting mechanism from the top of the earth to the pump, whereby the pump could be kept in operation; that is the part of the invention that Clasmann's deposition shows that they never ordered from Byron Jackson, and the part that the Pabst Company never got. They did get four or five centrifugal pumps. I would like to recall Mr. Doble.

**Testimony of W. A. Doble, for Plaintiff (Recalled in Rebuttal).**

W. A. DOBLE, recalled for the plaintiff in rebuttal.

Mr. LYON.—Q. You have heard the testimony, Mr. Doble, of the witnesses on behalf of the defense in regard to the use of white lead in the joint between the shaft-enclosing tubing and the tapered hub? A. I have.

Q. What is the purpose of the use of such white lead?

Mr. TOWNSEND.—That is objected to on the ground that no proper foundation has been laid in regard to defendant's pump.

Mr. LYON.—Q. You have examined some of these bearings, you have already said?

A. I have.

(Testimony of W. A. Doble, Sr.)

Q. And observed the white lead therein?

A. Yes.

Q. Are you able to state what the purpose of it is? A. I am.

Mr. TOWNSEND.—The same objection. He does not know the purpose for which it was put there.

The COURT.—He may state what effect it has.

Mr. LYON.—Q. What effect or function has such white lead in that connection?

A. White lead, in that connection, performs the function of a packing to make a tight joint.

Q. To what extent is white lead used for that purpose in the mechanical art?

A. In the mechanical art it is used very extensively. I have used it myself for over 40 years. [793]

Q. Can you produce any standard text-books upon the question to show that it is so used?

Mr. TOWNSEND.—There is no controversy, your Honor, that white lead will perform that function under various conditions. Perhaps it performs that function here. It apparently does in some of the pumps. It is immaterial.

The COURT.—If you admit it performs the function here, I will sustain the objection.

Mr. TOWNSEND.—I do not see how we could controvert the fact that that would perform the function of making a tighter joint than it would if it was not put in there. But to say it makes an absolutely tight joint from top to bottom of the well, we do not think so, our tests show that it does not

(Testimony of W. A. Doble, Sr.)

But it makes a tighter joint than it does if you do not put it in. I will admit that. It is a mere matter of degree as to how much tighter it gets.

The COURT.—Mr. Townsend, I understood your witnesses impliedly to deny that it had that function; that they put it in for the purpose, merely, of preventing corrosion or rust of the two parts.

Mr. TOWNSEND.—I believe it was put in, primarily, for the purpose of preventing rust.

The COURT.—I shall permit him to testify unless you admit it does perform that function, that is, that it performs the function of sealing the joints.

Mr. TOWNSEND.—I see no objection to agreeing to that stipulation as an additional function to the matter of preventing corrosion.

Mr. LYON.—With regard to the bell coupling joint that is made by the tapered hub and the end of the tube, what have [794] you to say as to that insuring a tight closure?

Mr. TOWNSEND.—They are referring to a flared end of a coupling that results from being pushed down onto the hub. We have told you how they are made, and I think there again that we are willing to stipulate that the more bearing surface you have between two parts, under certain conditions, you have a tighter joint.

Mr. LYON.—We want to prove by the witness that the pressure of this tube in the manner that has been testified to by himself and his son, by means of the screwing of the couplings together and the pressing of the tube on to this tapered hub, is

(Testimony of W. A. Doble, Sr.)

one of the best known, tightest joints that are used in mechanics; that is the purpose of it; and we are following up the testimony of Wm. A. Doble, Jr., and the stipulated testimony of this witness to show that it is commonly used, in fact is used where the greatest pressures are to be expected; and I expect to show by this witness that if it is desired to take care of gasoline and other very light products, as well as very dry steam under high pressure, such bell joints, as they are called, are used, and that they are known to give the tightest kind of a joint.

The COURT.—Unless there is an admission on the part of the defendant, I shall permit you to go into it.

A. I have very carefully observed the joints of these pumps that were withdrawn, and the tapered structure or construction of that hub, with a tube parallel and forced over the tapered hub will make the most perfect joint, using "perfect" in a relative sense, that is known in mechanics. And in regular mechanics, on a diameter of approximately 3 inches, from 2 to 3 inches, to secure force fits, which are put [795] together under hydraulic stress, an expansion of from 3/1000ths to 6/1000ths of an inch is allowed; and from the measurements on these hubs, I find that the tube is expanded to approximately 24/1000ths or 26/1000ths of an inch, and that forces the tube to conform to the tapered structure of the hub, and makes the most perfect closure against leakage that can be produced mechanically; and, due to that forcing action, the inner surface of the tube is burnished and brought



(Testimony of W. A. Doble, Sr.)

down to a perfect surface, as shown by the tube removed; and throughout all the high-pressure work which I have done, we have used, for the highest pressure work, a tapered joint; it is the common practice of the American Society of Auto-Motive Engineers for all joints, as is shown clearly in the standard forms of the Society of Auto-Motive Engineers; and, furthermore, I have used it for steam pressures as high as 1500 pounds per square inch, with super-heated steam having a temperature of from 800 to 900, or 1,000 degrees, so that the steam was a red-hot gas; but it is the only form of joint which we could develop that would make an absolutely tight joint under those circumstances. The amount of expansion which is allowed there in forcing that tube over the tapered hub, and in combination with the white lead, makes a perfect mechanical closure.

Q. I notice, in giving your last answer, you have referred to two works. What were they?

A. I am looking at page 821 of the Automobile Trade Directory, April, 1918, in which are published the patents and standards of the Society of Auto-Motive Engineers. I was also referring to a machinery hand-book, which is a standard hand-book on mechanical subjects, pages 879 to 890, which referred particularly to the effect [796] of pressed fits, and the amount allowed for pressed fits. I also have the same information from different authorities in the American Machinist Hand-book of Caldron & Stanley.

Q. I show you a device which I hand you disas-

(Testimony of W. A. Doble, Sr.)

sembled. Do you know what it is? A. Yes.

Q. What is it?

A. This is a tapered joint which we use for high-pressure steam work, and which we have used as shown here for pressures as high as 1500 pounds per square inch, and with red-hot steam, and is absolutely tight.

Q. How does that compare with the joints that we have been discussing in this defendant's Western Well Works pump at the ends of the shaft-enclosing tube?

Mr. TOWNSEND.—That is objected to as no proper foundation has been laid, and only applying his general information to the specific action of the pump under operative conditions.

The COURT.—Overruled.

A. In the defendant's construction, and in the joint which I hold in my hand, there is a flared tube forced on to the conical hub. In this structure it is a double-ended connector, and so the double hub is made in one ring.

Mr. TOWNSEND.—We ask that that be stricken out, as there is nothing to show that the defendant used a flared tube that fits over the conical hub. It fits over a cylindrical tube, which, under pressure, has been known to expand. This is a very different thing.

The COURT.—Denied.

A. (Continuing.) With double faces or with conical ends the same as the conical ends in the defendant's structure, differing only in degree. In

(Testimony of W. A. Doble, Sr.)

the defendant's structure, the tube is forced over the conical projecting hub, and is belled or [797] expanded so that it makes a perfect fit between the conical hub and the expanded bell of the tube; and in the tubes which I removed, we could measure the permanent set of this bell. Now, we have two belled tubes drawn together over this conical hub. In the structure which I have in my hand the bell-ing is more abrupt than that used by the defendant.

Mr. WHITE.—We offer in evidence this joint construction, and ask that it be marked "Plaintiff's Exhibit 19."

Mr. TOWNSEND.—Objected to as immaterial, irrelevant and incompetent.

The COURT.—Overruled.

Mr. LYON.—You may take the witness.

Cross-examination.

Mr. TOWNSEND.—Q. Are there any additional functions occurring to your mind, Mr. Doble, as to the use of a conical hub in the defendant's combination coupling other than to form a tight joint?

Mr. WHITE.—I object to that as immaterial.

The COURT.—Overruled.

A. No. The only purpose of that construction is to make a water-tight joint in a structure of that kind in which it would make the most perfect water-tight joint that could be constructed.

Q. Does it not occur to you that the taper of that character, the tapering hub, would assist in centering the tube section when it is lowered, so that it will go over a hub that is tapered more readily than

(Testimony of W. A. Doble, Sr.)

it would go over a hub that was perfectly cylindrical?

A. Well, if the function of the hub and the function of the tube was to make a tight joint, that would be quite true; but if you did not want a tight joint, then the tube would slip over just as readily as it slips over [798] the small end of this. The only function of the taper on this is to make an absolutely water-tight joint.

Mr. TOWNSEND.—I move that the latter part of the answer be stricken out, as the only pertinent part is where he said it would assist in centering a tube section.

Q. That does form and would form a centering device with a tube which is of larger diameter and of smaller outer tapering end, would it not?

A. Yes, if your tube is larger than your hub it is going to be easy to put the tube over the hub.

Q. Larger than the outer end of the hub—

Mr. LYON.—We do not contest that the small end of that hub would serve to help center that.

Mr. TOWNSEND.—My question is as to the big end of the hub.

Q. Would not the use of a tapered hub also assist, as has been testified, by the witnesses, in compensating for tubes varying slightly in length one from the other?

A. Surely, it would enable you to make an absolutely water-tight joint.

Mr. TOWNSEND.—I move that the latter part

(Testimony of W. A. Doble, Sr.)

of the answer following the answer "surely" be stricken out.

The WITNESS.—Not a bit of it; that is part of my answer. It is part of the answer, because unless you had the taper on there you could not have a water-tight joint, with a variable length of tube.

Q. I am not talking of water-tight joint now. I am talking of compensating for variations in length of tube. That could be a function of the tapered hub?

A. No, because you could have a parallel tube and that would drop over it, unless you wished to secure an absolutely water-tight joint; that is the only function of the taper, because otherwise you could make your whole hub parallel and the tube would slip over the [799] entire length, and that would take care of the difference in length of the tube as well, but the function that you ask me about, of the taper, is to make an absolutely water-tight joint and nothing else.

Q. You have testified in addition to that latter part one function is centering. You are willing to say that in combination with a tighter, or a water-tight or otherwise joint, by tapering the hubs you can compensate for variations in length of the tube section: Is that correct?

A. No, you are misstating me entirely. In the first place, I have said that the taper feature has absolutely no effect whatsoever, either as centering or as compensating for length. The only possible function that can be performed by the taper is to

(Testimony of W. A. Doble, Sr.)

make a tight joint, because if the double hub was parallel and of the size of the small end, then your tube would center on it just as readily, and it would allow for the variation in the length of your tube, so that by deduction the only function left of the taper is to insure, under those conditions, an absolutely water-tight joint. That is the mechanics of it.

Q. You have never installed any of these, have you?    A. I have made a lot of them.

Q. I say, you have never installed any of these defendant's pumps?    A. No.

Q. Now, taking a tube that has a tight fit, as you say, what is the effect, if you know, of the vibration resulting from a rapidly-rotating pump shaft on the gradual increase in diameter of that end of the tube section where it slips over the hub?

A. With the tube forced tight over the hub there would be no deterioration; I presume that is what you are interested in, of that fit, or it would not wear that [800] structure large, unless the vibration were of such magnitude as to disturb the entire structure and set by deflection.

Q. There is a tendency of a suspended shaft driven from one end to vibrate, is there not?

A. Not necessarily so. There is a law of the critical speed of shafts, which, to prevent a bowing action of the shaft rotating, the distance between the bearings must not be longer than or greater than a certain amount, based upon the speed and the diameter of the shaft.

(Testimony of W. A. Doble, Sr.)

Q. Do you know what vibratory action takes place in pumps of this character with regard to the shaft when in rotation? A. Yes.

Q. What is it?

A. The impeller may not be balanced originally, it may not be a dynamic balance.

Q. That will cause vibration throughout the shaft lengths?

A. That would cause vibration at the lower end.

Q. The vibration will be transmitted to the several bearings?

A. No; it will be transmitted through the entire structure.

Q. And that would tend to cause these parts that have fractional contact to have a slight movement one on the other? That is perfectly obvious, isn't it?

Q. You mean with reference to the tube and the hub?

Q. Yes. A. Not necessarily so.

Q. It might do it? There is nothing there to hold them rigid?

A. Oh, yes, there is; that is the most rigid structure there, in that they are held absolutely under a very heavy compression between the two combination couplings.

Q. In the one that you saw, which was the top section of the pump head—that is what you are basing your experience on, isn't it? A. No.

Q. In the defendant's pump structure what you

(Testimony of W. A. Doble, Sr.)

saw there [801] Monday, where that was held very tight?     A. No.

Q. Plus, perhaps, Plaintiff's Exhibit "4," the Anderson pump, in its inert condition?     A. No.

Q. Have you seen any other of the defendant's pumps taken apart?     A. Yes.

Q. Have you had opportunity to observe the defendant's pumps under operative conditions?

A. I could not say just where or when, but having been in the pump business a great many years, I know I have seen them, but I could not say just where or just when.

Q. You have not seen any instance, within your recollection, a pump of defendant's in operation so you would have an opportunity to observe what the shaft action would be at different points in the line of the column between the pump-bowls and the pump-head, have you?

A. No, I never went down a bored well while the pump was running.

Redirect Examination.

Mr. LYON.—Q. Mr. Doble, you have been asked a good many questions about the taper on these hub bearings, and the couplings of the defendant's pumps. Based upon your experience in the manufacture, and I understood you said you were the chief engineer of the Pelton Water Wheel Co. of San Francisco, and manufactured some of these same pumps?     A. I am.

Q. Based upon that experience, are you able to



(Testimony of W. A. Doble, Sr.)

state which, comparatively, is the cheaper to manufacture, such a hub straight or with a taper?

A. It adds to the cost when you depart from an ordinary cylindrical construction, as it requires a greater degree of accuracy in measuring. In these different hubs I find accuracy extremely *extremely* good and uniform, and it costs more to do that kind of work than [802] to do plain, cylindrical work.

Mr. LYON.—That is all.

Mr. TOWNSEND.—That is all.

**Testimony of O. P. Woodburn, for Plaintiff (In Rebuttal).**

O. P. WOODBURN, called for the plaintiff in-rebuttal, sworn.

Mr. LYON.—Q. Please state your name, age, residence and occupation, Mr. Woodburn.

A. O. P. Woodburn; 50 years of age; residence, Houston, Texas. My profession is a mechanical engineer.

Q. Are you acquainted with Mr. Mahlon E. Layne, who sits back of me here? A. Yes.

Q. How long have you known Mr. Layne?

A. I think about since 1896 and 1897.

Q. Were you ever at any time associated with him in business in Texas? A. Yes.

Q. In what business?

A. In the manufacture of well supplies, and also in the installing of pumps in wells.

Q. You were acquainted with Mr. Layne before he

(Testimony of O. P. Woodburn.)

went to Texas, were you?   A. Yes.

Q. Do you know what year it was he went to Texas?   A. In January, 1902.

Q. You worked with or for Mr. Layne on a Milner ranch in Texas?   A. Yes.

Q. Where was that?

A. That was at Pierce, Texas, I started to work there in about April 22d, or thereabouts.

Q. How are you able to fix that date?

A. From a memorandum-book that I had of that year.

Q. Is that memorandum-book still in your possession?   A. No.

Q. Where is it? Is it in the files of the United States District [803] Court at Los Angeles?

A. I suppose it is; yes. It was left there.

Q. It was offered in evidence when you gave your testimony before the Special Master in the case of Layne & Bowler Corporation v. The American Well & Prospecting Company trial?   A. Yes.

Q. What work was it that you and Mr. Layne were doing in April, 1902, upon said Milner ranch?

A. We were attempting to install a pump, what is known as an old-style vertical pump, in pits that had to be dug by hand, to a depth at which the pump would secure the desired quantity of water.

Q. Did you ever at any time have any conversations with Mr. M. E. Layne in regard to any scheme or thought of his in regard to pump installation or pumps?

A. Yes; a few days after starting the work at

(Testimony of O. P. Woodburn.)

Pierce we encountered trouble in excavating, and at that time he mentioned to me that he could make a pump that could be put down in a small-sized bore or pit that would answer the purpose of the type of pump we were then installing.

Q. Please go ahead and tell us what it was that he explained to you at that time, and how he proceeded. Who was present?

A. I talked to him from time to time, but the special time that I can remember is when a party by the name of Tewksbury was present, and also Mr. E. A. Milner. This was out near the well of which we were trying to dig the pit, by the side of a barn or boiler-house that was there, and Mr. Layne described his ideas, illustrating it with some pencil-marks on the side of the building while we were talking.

Q. Describe those pencil-marks, and what Mr. Layne said at that time, and what conversation you had with him at that time, [804] which you remember; give us the substance.

A. I cannot tell the exact words, but the substance was to the effect that Mr. Layne's ideas of making the pump were to have the pump suspended from the surface of the ground down to such a depth as was necessary, supporting the pump by a line of tubing which ran through the pump impeller inside of this line of tubing; he would have a line of shafting to operate the pump, with bearings at various intervals, and this tubing would support the pump, keep the shafting and

(Testimony of O. P. Woodburn.)

bearings in line, and provide a means to furnish a lubricant to the bearings along the shaft line. The arrangement of the pump in the pit was discussed, but as that was a minor detail and was only a matter of construction, that was not impressed upon my mind at that time.

Q. Did you have any connection, in a business way, with Mr. Layne in the year 1903 at the Scotvold & Linner well?

Mr. TOWNSEND.—Objected to as immaterial and leading.

Mr. LYON.—It is preliminary.

The COURT.—He may answer. A. Yes.

Mr. LYON.—Approximately when was that?

A. It was, as I remember it, in the late summer or early fall—late summer, I think about the close of the pump season.

Q. Of 1903? A. Yes.

Q. When you say late summer, do you mean the latter part of August or forepart of September?

A. Probably earlier than that.

Q. I ask you that question because the term "summer" in California is a very indefinite thing. What do you mean by it in your answer?

A. I mean at the close or near the close of the pumping season for rice irrigation, which is along about August. [805]

Q. What kind of a pump were you working on with him at that time? A. It was a turbine pump.

Q. What were you doing with it?

(Testimony of O. P. Woodburn.)

A. It was installed over at the Scotvold & Linner well to determine whether it would operate successfully.

Q. How was that pump installed? Could you describe it?

Mr. TOWNSEND.—This is referring, on rebuttal to occurrences subsequent to the date of application of the Layne patent in suit, and immaterial.

Mr. LYON.—But prior to any installation by the Byron Jackson Company of an alleged invention of Byron Jackson.

Mr. TOWNSEND.—The defendant is not seeking to prove prior use; we are seeking to prove prior invention and an inventive act contemporaneous with the conception, and this was all subsequent not only to that, but to the date of application of the Layne patent in suit. It is immaterial, and it is not rebuttal.

The COURT.—How would it be material if it is after the date of the Layne application?

Mr. LYON.—Not unless there is some contention here that Mr. Layne, because of his application for a patent, has not reduced the invention to practice. On my own theory of this case, your Honor, the Layne application is a constructive reduction to practice, and we need to show nothing further. Counsel's objection would foreclose him from hereafter arguing that anything further is required, and if he insists upon the objection I will not insist upon the answer.

Mr. TOWNSEND.—The filing of an application

(Testimony of O. P. Woodburn.)

is such a constructive reduction to practice, as counsel says, but what he does later is only in the nature of cumulative matter. It would be [806] utterly immaterial.

The COURT.—Counsel insists on it?

Mr. LYON.—You may take the witness.

Cross-examination.

Mr. TOWNSEND.—Q. During the years since 1902, Mr. Woodburn, where have you been, in what line of work and where?

A. I have been engaged nearly all the time in Houston, Texas, in the manufacture of water well supplies.

Q. Have you been, during all of those years, connected with Mr. Layne, with the president of the plaintiff?

A. Nearly all those years. There was 1907, I believe I was not connected with him, and since 1918 I have not been connected with him.

Q. But, otherwise, you have been continuously associated with him? A. Yes.

Q. When did you last testify with regard to the matters that you have just referred to?

A. In Los Angeles, in the spring.

Q. In the American Well Prospecting case?

A. Yes.

Q. In which the present plaintiff was plaintiff there? A. Yes.

Q. Involving this same patent in suit?

A. Yes.

Q. I believe the record there shows that you care-

(Testimony of O. P. Woodburn.)

fully reviewed the testimony that you were to give before giving it there?

Mr. LYON.—We object to that statement.

The COURT.—Sustained.

Mr. TOWNSEND.—Q. How recently have you discussed the matter of this alleged early disclosure, Mr. Woodburn, with Mr. Layne or any of the parties connected with the plaintiff in suit?

A. I believe it has been mentioned once or twice since I have been here this time. [807]

Q. Since you have been here in San Francisco?

A. Yes.

Q. Have you had occasion previously to testify in this same matter—previous to the American Well Prospecting case, the Los Angeles suit?

A. I gave testimony in some prior suits, but at that time I did not know that I had this memorandum-book, and could not remember the date without the memorandum-book, that I discovered in my papers after moving from Memphis to Houston; I was cleaning out and ran across this memorandum-book.

Q. The memorandum-book is a comparatively recent discovery, isn't it, Mr. Woodburn?

A. No, I have memorandum-books for nearly every year since 1902.

Q. But this one is a comparatively recent discovery?

A. It was discovered after my return from Memphis in 1918.

Q. Then you discovered it since 1918?

(Testimony of O. P. Woodburn.)

A. During 1918.

Q. Who made the drawing on the building that you referred to? A. Mr. Layne.

Q. What did he make that drawing with?

A. It might have been a pencil, or it might have been a nail, I do not remember at the present time, but I remember the outlines that were marked on the rough boards of the building.

Q. You say it might have been a nail?

A. It might have been. If I had a pencil in my pocket, though, he would have borrowed it from me and made it with the pencil, because he never had a pencil of his own.

Q. Did that nail or pencil drawing show a stuffing-box?

A. It did not go into details of the work. It just gave an outline of how the pump would be suspended on the surface of the ground, with the enclosing-shaft casing, and the shaft running inside to operate the pump.

Q. Did it show any bearings?

A. I don't think it did; it [808] just showed the outline of the pump.

Q. Did it show the shaft in sections?

A. I don't think it did.

Q. You don't believe it showed the lower stuffing-box?

A. I don't think it did, because all that part was oral description given by Mr. Layne, as he outlined it.

Q. Did it show the top stuffing-box?



(Testimony of O. P. Woodburn.)

A. I think not.

Q. Did it show the lubricating means?

A. That was the description also.

Q. That was entirely oral?     A. Yes.

Q. Did that show a discharge pipe, that nail or pencil drawing, that you speak of?

A. I believe it did, but I am not sure in regard to that.

Q. Was that discharge pipe concentric or eccentric to the shaft?     A. Eccentric.

Q. Do you recall any other features that the nail or pencil drawing showed?     A. No.

Mr. TOWNSEND.—That is all.

Redirect Examination.

Mr. LYON.—Q. Have you a clear recollection, Mr. Woodburn, as to which parts were in sketch form on the side of the building and which were oral?

A. The parts that I am sure were in sketch form were the important ones. That is all that we were considering at that time, the important parts, were in sketch form—that is the outline of the parts.

Q. What was the object of making the sketch at that time, do you know?

A. To show how that pump could be made, or could be put into a pit, that would not require so much expense and work to install, and which could be put down to a greater depth than was possible with the means that we were then employing.  
[809]

(Testimony of O. P. Woodburn.)

Q. What was the occasion of making it on the side of the building?

A. Because we were out of the building and there was no convenience for making a drawing or anything at hand.

Q. The purpose was so that Mr. Tewksbury and Mr. Milner and yourself would understand what he had in mind: Was that it? A. Yes.

Mr. TOWNSEND.—Objected to as leading.

The COURT.—That is quite leading.

Mr. LYON.—That was very grossly leading, but I wanted to know what it was. I don't think it is objectionable after all the testimony. That is all.

Mr. Townsend, you have a copy of Mr. Layne's testimony in the so-called Los Angeles case; you have heard Mr. Woodburn's testimony. Do you want us to take the time to examine Mr. Layne in regard to the subject matter that Mr. Woodburn has just testified to, or will you stipulate if called he would testify to substantially the same facts?

Mr. TOWNSEND.—With this addition, if I may ask the witness a question or two on cross-examination in regard to certain parts of the testimony.

Mr. LYON.—You can. In other words, it is stipulated he will testify substantially as Mr. Woodburn has, and you may cross-examine him.

**Testimony of M. E. Layne, for Plaintiff (In Rebuttal—Cross-examination).**

M. E. LAYNE, recalled for the plaintiff in rebuttal.

**Cross-examination.**

Mr. TOWNSEND.—Mr. Layne, in the so-called Los Angeles suit of your company, the present plaintiff, against the American Well & Prospecting Company, on the same patent, do [810] you recall your testimony in connection with the letter which Mr. D. W. Mead, one of the plaintiff's witnesses, in this case, wrote to the Layne & Bowler Company, at Los Angeles, California, November 7, 1911, on the letter-head of Daniel W. Mead, Consulting Engineer, Madison, Wisconsin:

"Replying to your favor of October 13th, in regard to enclosed line shaft centrifugal pumps, I would say that the first construction of this sort with which I am acquainted was furnished one of my clients—the Pabst Brewing Company, of Milwaukee, for some deep well pumps built by the Byron Jackson Machine Co., San Francisco, California, about 1901. The proposition and a sketch of the proposed arrangement was furnished me early in that year, the exact date of which I am unable to give you. I trust, however, the above will give you the information you desire.

Yours very truly,

(Signed) D. W. MEAD."

This letter appearing in the transcript of the Los Angeles suit at page 991, and I will ask you at

(Testimony of M. E. Layne.)

the same time if you recall—

Mr. LYON.—I will tell you, Mr. Townsend, I will, of you want to stipulate, stipulate that the official reporter may copy the whole of Mr. Layne's testimony in that Los Angeles case into the record, and it may serve as your cross-examination, if you want it.

Mr. TOWNSEND.—No, I just want this one question in regard to the matter.

A. That letter, as I remember it, was written in answer to a letter that Mr. Bowler had written Mr. Mead, with which I had nothing to do; but the letter that you have just read, I am quite sure, is correct. That is, it was received from Mr. [811] Mead, but I had nothing to do with it. I don't know any of the particulars; I neither received the letter nor dictated the letter to which that was a reply, and I knew nothing of the other letter for some little time; that is the best of my recollection; I might have been informed of it right at that time, but at the present time I don't know that I was.

Q. On page 998 of the same Los Angeles record appears a copy of a letter from Mr. Bowler to you, dated November 13, 1911:

“M. E. Layne, Esq.,

“Houston, Texas.

“Friend Layne: Referring to the copy of following letter, it occurs to me that I had better let you get hold of this fellow and not correspond further with him. He is an old man, having such evidence as this, which I am sure the Byron Jackson Com-

(Testimony of M. E. Layne.)

pany have in their possession, it is hard for me to get the right kind of a deal out of them. If you cannot attend to it at once, let me know and I will endeavor to get him straightened out and agree that it was in the same year the drawing was made and sent to me, that the sketch was made, etc."

Do you recall that letter?

A. I recall getting the letter; yes.

Q. That letter refers to the one I have just read in regard to Mr. Mead?

A. I think so, but I am not positive of that.

Mr. TOWNSEND.—That is all.

Mr. LYON.—Mr. Layne, one other question: I show you a letter on the letter-head of the Byron Jackson Machine Works to the Peden Iron & Steel Co.—this is the so-called Peden Iron & Steel Co. correspondence in the Los Angeles case, of which you have copies, Mr. Townsend—I simply wish to offer this in evidence in this case and to supply a copy to-morrow of the one exhibit which will be here, certified, from Los Angeles; on account of the holiday the photographing was [812] delayed.

Mr. TOWNSEND.—I suggest that those letters be read in evidence, as part of the record.

Mr. LYON.—Do you want me to take the time to read them?

Mr. TOWNSEND.—No, let them be copied into the record.

Mr. LYON.—This is correspondence had at that time, Mr. Layne, between the Byron Jackson Machine Works and the Peden Iron and Steel Co.?

A. Yes.

Mr. LYON.—In one of these letters there is referred to a blue-print, 1-B-89, of the Byron Jackson Machine Works. There is no need, Mr. Townsend, of duplicating that; it is already in evidence; you have offered it in your behalf, and the only thing we reserve is the production here to-morrow, or as soon as it arrives from Los Angeles, of the photographic certified copy of the other sketch which is referred to in these letters, and with that the plaintiff closes its case.

The COURT.—You do not offer these in evidence?

Mr. LYON.—I am offering these in evidence; they may be copied into the record and returned to us.

(The letters are as follows:)

(Letter-head of Byron Jackson Machine Works.)

“San Francisco, Cal. Dec. 2, 1902.

“Peden Iron & Steel Co.,

“Houston, Tex.

“Dear Sirs:

“We are in receipt of yours dated Nov. 28th and note that the prices quoted you on our centrifugal pumps are too high for general service. If you have any propositions for high head pumps, kindly send us specifications. We are fast replacing steam direct acting pumps with centrifugal pumps for high heads. We are now manufacturing centrifugal pumps for Schenectady, N. Y. to raise water 520 ft. We have two orders [813] in the works now for 6" centrifugal pumps to raise water 250 ft.

“Respectfully,

“BYRON JACKSON MACHINE WORKS.

“Per BOYER.”

*vs. Layne & Bowler Corporation.* 873

(Bearing rubber stamp: "Peden & Co., Received Dec. 8, 1902.")

"Jan. 23-03 16-Sa.

"Byron Mfg. Co.,

"San Francisco, Cal.

"Gentlemen:

Please give us price by return mail and state how soon you can make shipment of same, on 3-pumps 36" 36 foot lift, and 3-pumps 36" 16 ft. lift. Also please give us prices on 24" pump.

"Yours very truly,"

(Bearing rubber stamp: "File Copy must not be held out of Files." and also "Return to — E. A. PEDEN.")

"March 7th, 1903-24-JFB.

"Byron Jackson Mach. Works,

"#625-631 Sixth St.,

"San Francisco, Cal.

"Gentlemen:

"We are in position to make a sale of some pumps, provided we can get a pump that would meet the requirements, i. e.—we wish a pump that would discharge from 1,000 to 2,000 gallons of water per minute on a lift of 50' to 60'. We also want a pump that can be placed in as small a hole as possible, say 30" to 40" in dia.

"We herewith enclose a sketch showing, in our opinion, what might be possible in the way of designing a top discharge for a centrifugal pump. In this sketch you will notice that we have an under suction and a top discharge; the propellor discharges into an opening directly over same and convey to one side

of the shaft to discharge pipe in place of followingg around the pump [814] and discharging in the usual manner, on the side.

"If this discharge can be arranged it will lessen the size of the hole pump must be placed in.

"If you can design a pump with as great efficiency in this way; even though the end thrust on the end would be greater than in the top suction, we could overcome this by using ball-bearings on shaft.

"In your judgment would we need further stay the pump in the pit other than by being braced to the shaft and post suspending the pump.

"To make a long story short. We wish you to submit us a plan or cut-off pump that you would recommend for this work. We herewith enclose pencil sketch as we believe it possible to design a pump on this plan. This discharge is simply the same as your compound discharge would be from one into another. If you can furnish this pump, could you make immediate shipment and at what price? Would you recommend compound pump?

"Yours truly,"

(Bearing rubber stamp: "File Copy must not be held out of Files," and "Return to — E. A. PEDEN.")

(Letter-head of Byron Jackson Machine Works.)

"San Francisco, Cal., Mar. 13, 1903.

"Mess. Peden Iron & Steel Co.,

"Houston, Texas.

"Gentlemen:—

"Replying to your valued inquiry, by Mr. P. D.



*vs. Layne & Bowler Corporation.* 875

Bowler, referring to a Centrifugal pump to lift 1000 to 2000 gallons of water per minute, 50 to 60 ft., same to be placed in a hole, say 3 ft. to 4 ft. in diameter.

"We hand you herewith our blue-print 1-B-89 showing 8" vertical Centrifugal pump with 18" runner, of capacity of [815] 1600 gallons per minute, for a total head of 60 ft., when making about 825 rev. per minute. The weight of the shafting on this pump will be partly balanced by our automatic device, but not entirely so. It is therefore necessary that you provide a step bearing on the extension shaft of this pump to take up the total weight.

"The efficiency of this pump will be practically as high as any of the regular type that we manufacture. Price, \$200.00 f. o. b. cars San Francisco. Approximate weight 1500 pounds. We could furnish the same in 15 days after receipt of order.

"This pump will not require any further staying than bracing to the shaft and posts suspending the pump.

"Hoping to be favored with your valued order, we are,

"Yours very truly,

"BYRON JACKSON MACHINE WORKS,

"Per PAULSMEIER."

(Bearing rubber stamp: "Peden & Co. Received Mar. 17, 1903. Ansd.—" And "Quotation.")

"Mar. 17-03 17-Sa.

"Byron Jackson Machine Works,

"San Francisco, Calif.

"Gentlemen:

"Yours of the 13th at hand and contents noted. You have evidently misunderstood our letter. We do not wish a side discharge pump which your blue-print shows. You have evidently overlooked the part of our letter where we ask whether you could furnish us a pump with a top discharge similar to the series Compound pump you build, i. e. with a runner to discharge direct over or on top of same in place of at one side as per your blue-print.

"In this way the pump could be put down in a much smaller well than you have outlined, namely 3 or 4 ft. We wish to use [816] this pump in a smaller hole than four feet, in fact we do not care to go over 30 or 36" at the outside.

"Please let us hear from you regarding this matter."

(Bearing stamp: "File Copy must not be held out of Files.")

(Letter-head Byron Jackson Machine Works.)

"San Francisco, Cal., April 2, '03.

"Peden Iron & Steel Co.,

"Houston, Texas.

"Gentlemen:

"Replying to your valued favor of March 17th which we have not answered immediately because we wished to have a drawing made at our draughting-room to lay the matter out properly before quoting you.

"We hand you herewith sketch showing an 8" vertical pump with 18" runner which we think will just fill your requirements. You will notice that we have split the discharge end in two. We did this in order to hang the pump centrally, so it will not require any further bracing which would be absolutely necessary if the discharge were on one side as the weight is then not equally distributed. The pump as we have shown it is intended to be lowered into a pit and it can be hung on the two pipes. You would have to provide a bearing just above the pump fastening on both ends to the 6" pipe, or if you prefer, we would cast brackets on the pump body for the purpose of bolting on wooden posts the same as it is done with our regular pumps. The price on this pump would be \$250.00 for the first pump as we would have to make special patterns to suit this condition, but if you should have several pumps of this size, we would make them for the same price as quoted you in our last letter which is—\$200.00. We also hand you a small blue-print which we made about a year ago showing a small pump designed for the purpose of slipping [817] it into a round well. You will notice that the bearing above the pump is fastened to the pipe, the same as we advised you to do it above.

"We think that this will make a very good job and ought to bring a good deal of business. We can furnish you with one of these pumps in a very short time, say two to three weeks.

"Hoping to be favored with your valued order, we remain,

Very truly yours,

"BYRON JACKSON MACHINE WKS.

"Per PAULSMEIER."

(Bearing stamp: "Peden & Co. Received Apr. 7, 1903. Ansd. 4-8-3 #3." "Copy to Layne.")

"Apr. 8-03 3-Sa.

"Byron Jackson Mach. Works,

"San Francisco, Calif.

"Gentlemen:

"Replying to your favor of the 2nd inst. would say that the writer is leaving the city today to be gone for some time and as soon as he returns will go into the matter and let you hear further from us. Please accept our thanks for your attention relative to this matter.

"Yours very truly,"

(Bearing stamp: "File Copy must not be held out of Files." and "Return to — E. A. Peden.")

Mr. TOWNSEND.—May I ask to recall Professor Lesley for one question in surrebuttal?

**Testimony of E. P. Lesley, for Defendants (Recalled in Surrebuttal).**

E. P. LESLEY, recalled for defendant in surrebuttal.

Mr. TOWNSEND.—Q. Professor, you heard Mr. Doble, Sr.'s testimony with regard to the action of a rotating shaft on a spiral groove of the defendant's combination coupling, and its [818] propulsion of a pump bearing but slowly; have you made any

(Testimony of E. P. Lesley.)

tests with regard to what the action is with respect to the defendant's bearing?

Mr. LYON.—We object to that on the ground it is a part of the case in chief, and they testified fully in regard to it.

The COURT.—Possibly so, but it was gone into by you, and he may answer.

A. Yes, I have made such tests.

Mr. TOWNSEND.—Please explain the result of those tests and what you arrived at.

A. Under my directions we constructed a bearing structure involving a single bearing, provided within a thousandth of an inch—within such dimensions as are possible with reamers—with the same diameter as the standard bearing for a  $1\frac{1}{4}$  shaft.

Q. Provided with the same pitch of helical groove?

A. Provided with the same pitch of helical groove, and same diameter of shaft supplied, and support for the bearing, so that there would be no thrust upon one side, so that it would be simply hanging vertically within the bearing, and arranged to rotate it at various speeds. We determined, first of all, the pump action of the spiral bearing. Mr. Doble, by the way, is entirely correct, that it should be called a helical groove; I have simply adopted the term "spiral," because that is the term the Western Well Works have used. The action of this helical groove is to conduct lubricant downward, since the groove is downward in the direction of rotation—conducting it downward with considerable rapidity and with astonishing force. I used a

(Testimony of E. P. Lesley.)

number of lubricants. I used water alone. Water would be conducted downward with the ordinary speed of rotation of about 1100 revolutions per minute, with approximately a [819] pound pressure per square inch—would maintain a pound pressure per square inch. A mixture of water and emulsifying oil would be conducted downward with greater pressure, maintaining a higher column of lubricant. The pressure developed, the downward pressure developed by the lubricant itself passing through that helical groove, appeared dependent upon the quantity of oil, upon the viscosity of the fluid. With the pure lubricant, itself, the pure oil, itself, it developed pressure of 60 pounds per square inch, with a single bearing operated at normal speed, normal clearance of the bearing, and a normal size oil groove.

Q. What would be the result of a series of bearings at different stages along the same shaft? Would that have any difference in regard to the action on the fluid contained in the tube?

A. If the tube were full, of course a series of bearings would act as a multi-stage pump, one bearing would develop some pressure, on the next one further pressure, and so on.

Mr. TOWNSEND.—That is all.

Cross-examination.

Mr. LYON.—Q. Your tests, then, were with water? A. Yes.

Q. With water and emulsifying oil? A. Yes.

Q. And with emulsifying oil?

(Testimony of E. P. Lesley.)

A. Yes, and other things.

Q. What else? A. Graphite grease.

Q. How much graphite grease?

A. Enough to fill the top of the bearing so that it would feed down through.

Q. What did you have to hold the grease above the bearings in that case?

A. I provided a collar.

Q. Made a cup?

A. A collar around the top of the bearing substantially the same as this recess right here.

Q. Any pressure on top of that, on the grease that was in that cup? A. Absolutely none. [820]

Q. And the bearing was stationary that had this grease in it? A. The bearing stationary?

Q. Yes. A. Entirely.

Q. From your knowledge of the Western Well Works pumps, how much grease or lubricant could be contained in one of the lengths of tube, shaft-enclosing tube, with a shaft and containing the tube couplings or bearings? Approximately how much grease?

A. Without stopping to make an estimate I should guess four or five pounds, perhaps ten.

Q. Now, Professor, I understood you to say that the greater the viscosity of the grease the harder it shot through the bearings in this test: Is that correct?

A. No, I did not say that exactly. What I said was the greater the viscosity of the fluid the greater the pressure developed.

Q. How about the rapidity of flow through it?

(Testimony of E. P. Lesley.)

A. I made no measurements of the rapidity of flow.

Mr. LYON.—That is all.

Redirect Examination.

Mr. TOWNSEND.—Q. Have you the apparatus in the courtroom that you made this test with?

A. Yes.

Q. Will you kindly exhibit that to the Court?

A. Yes. This is the model that was constructed. This is the bearing which is provided with a spiral oil groove. This is the collar provided into which we could feed oil, or into which we could put grease here. This bearing screws into a flange which is the upper portion of the steel chamber; at this point and there, tubes led either way; there were originally provided both with stop-cocks, and we could attach to these either pressure gages or sight gages to see how high the rotation of this shaft would hold the lubricant fed at this point. That is, we could [821] see with the rotation of the shaft, with the spiral groove there or with the helical groove there, although this small film would fill the entire chamber, fill the whole bearing, and fill it up to this level, with no rotation there would be maintained only a condition of equilibrium in the tube column. On this pipe and this one, upon rotation, so that the direction of rotation is in a downward direction of the helical groove, it containing a supply at this point, the lubricant will be driven downward and upward in this tube, and if our tube is approximately long enough until it would run out at the



(Testimony of E. P. Lesley.)

top. For a mixture, it would run over higher. We used stop-cocks as shown here, so that we could attach pressure gages. The device was driven from a motor with a belt. We tried various speeds of rotation, and I determined that the developed pressure varied with the rotated speed.

Mr. TOWNSEND.—I offer the apparatus referred to by the witness as Defendants' Exhibit "Z."

Mr. LYON.—Objected to as irrelevant and immaterial, and incompetent. All that the witness claims is that it shows pressure. He doesn't show how much oil or how much lubricant he gets.

The COURT.—Overruled.

Mr. LYON.—Note an exception.

Mr. TOWNSEND.—Q. Is that groove in this device the same as in the pump?

A. As near as it is mechanically possible to make it. The intention was to make it exactly alike. The shaft is entirely smooth. I would like to say to the Court that the action surprised me, I did not myself believe that it could be so considerably different. The shaft is entirely smooth. It is installed at the bottom of the bearing, and [822] rests on the bottom, on a conical pin at this point. Its weight is partially supported by a ball thrust and bearings at the top; that is the shaft in this chamber.

The COURT.—Where is that groove?

A. The groove is over here.

Q. It isn't quite clear to me why the action there would be the same as that going on down and out

(Testimony of E. P. Lesley.)

here. The centrifugal force here would tend to do that. Where does the oil leave this bearing now?

A. The oil?

Q. To get into this pipe.

A. At the bottom of the bearing. That is as far as we are able to see.

Q. Where does it come out?

A. It comes around the clearance of the bearing; the clearance of this, as close as we are able to make it, is 6/1000ths of an inch. To prove that it was not centrifugal action that created the downward pressure, we turned this in the other direction, and the fluid was immediately pumped out and ran over the top of the bearing.

Mr. LYON.—Q. You don't know how much lubricant of any particular viscosity would be pumped through one of these bearings, according to these experiments of yours, in a given length of time?

A. I made no determination of the quantity of lubricant that would be pumped through, of any particular lubricant in a given time.

Q. Have you any idea as to that, Professor?

A. Yes, Mr. Lyon, I have merely a rough idea. As I remember it, it was a 2 to 1 mixture, 2 of water and 1 of oil; it may have been the other. I made all the way from 1 water to 2 oil up to 1 water and 10 oil. Pardon me, I am all wrong about that. 1 water and 2 oil, and 1 oil and 10 water, and then straight water. I merely stood with a tomato can—this tube is screwed into this portion [823] here, and then a little tube put above there, so I could pour it in, and I poured it in a fair stream, I should

(Testimony of E. P. Lesley.)

say perhaps a pint, in two or three minutes.

Q. Do you think that that kind of a mixture, your emulsifying oil,—take the oil alone, for instance, that you used there, that that would run that quantity through in five minutes?

A. You mean running a pint through in five minutes?

Q. No, the quantity you said. I think you said half a pint in five minutes.

A. Yes, I think it would run half a pint through in five minutes.

Mr. LYON.—The plaintiff rests, your Honor.

The COURT.—Now, how do you want to dispose of the case, gentlemen?

Mr. TOWNSEND.—Does your Honor desire to hear oral argument, or do you desire to have the case submitted on points and authorities?

Mr. LYON.—We would prefer oral argument, your Honor, if you have the time—some of it, at least. However, we will be pleased to suit the convenience of the Court.

The COURT.—I don't know whether oral argument would be of very much assistance, or not.

Mr. TOWNSEND.—I may suggest that if your Honor contemplates taking the case under advisement, we would probably only be taking up your Honor's time by an oral argument. Of course, if you were in a position to decide the case at the end of an oral argument, it would expedite matters.

The COURT.—I am rather pressed for time. I dislike to say I will not hear oral argument, because, ordinarily, I prefer to leave that matter entirely

to counsel. Sometimes oral [824] argument is of assistance, especially where I have not heard the evidence myself.

Mr. LYON.—If your Honor does not think it would be of assistance to you, we will not press for oral argument. We will agree to submit it on points and authorities.

The COURT.—I cannot very well say that it would not be of assistance. Counsel, perhaps, would know better than I as to whether or not oral argument would be of assistance. Oral argument would not be of very much assistance in weighing the testimony, for instance. As a general rule, unless there are some particular points for oral argument, I do not think it is of very much assistance. I must take the case under submission anyway.

Mr. LYON.—Then we will submit it on points and authorities. That is satisfactory to the plaintiff. What time would you say?

(After some discussion, it was agreed that the cause be submitted on briefs to be filed, 20, 20 and 30.)

The COURT.—Gentlemen, this device which has been introduced here just now, it occurs to me that it is rather cumbersome for the clerk to take care of. I do not think it is very material.

Mr. TOWNSEND.—Well, it is only to have it here, your Honor. It could be marked for identification and withdrawn, and then used on the argument, or it could be presented at any time the Court desired to see it, if your Honor thinks you would care to see it.

The COURT.—I believe that would be the better plan. It is so cumbersome that I dislike bothering the clerk with it. I think you may withdraw it.

Mr. LYON.—And it is understood that the one exhibit I [825] spoke of, the certified copy from Los Angeles, can be filed as soon as it is received, and have the same force and effect as though filed in open court.

The COURT.—Yes.

[Endorsed]: Filed Oct. 13, 1920. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk. [826]

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In the District Court of the United States for the  
Northern District of California Second Division.

IN EQUITY—No. 485.

LAYNE & BOWLER CORPORATION,  
Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation),  
ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation),  
STANLEY M. HALSTEAD, P. E. VAUGHAN  
and ALLEN W. ROSS,

Defendants.

**Opinion.**

FREDERICK S. LYON, WILLIAM K. WHITE  
and LEONARD S. LYON, Attorneys for Plaintiff.

CHAS. E. TOWNSEND and WILLIAM A. LOFTUS,  
Attorneys for Defendants.

DIETRICH, District Judge.

Plaintiff is the holder by assignment of United States patent numbered 821,653, issued to Mahlon E. Layne on May 29, 1906, on application filed therefor April 28, 1903. It relates to a well mechanism, more particularly designed for pumping from deep, bored wells. The defendants are charged with infringing claims 9, 13 and 20, which are as follows:

"9. In well mechanism the combination with a pump casing, of a rotary pump of a jointed pump shaft and a closed casing surrounding the pump shaft from the pump to the top of the well."

"13. The combination with a pump and its actuating shaft of a sectional casing therefor provided at each end of each section with a fixed block with bearings for the shaft, the casing being closed at the top and provided with an air vent." [827]

"20. The combination of a well casing, a rotary pump therein, and a line shaft for the pump entirely closed off from the water in the well."

The same patent was involved in *El Campo Machine Co. vs. Layne*, 195 Fed. 83, *Van Ness vs. Layne*, 213 Fed. 804, and *Getty vs. Layne*, 262 Fed. 141. In the *El Campo* case claim 13 was held to be valid, and in the *Van Ness* case claim 9 was thought to be substantially the same as claim 20, and the validity of the latter was expressly adjudged. Additional defenses are put forward here, but upon the whole I find in them no substantial reason for reaching a different conclusion, and hence, without giving consideration to the plaintiff's contention that the defendants are estopped from questioning its validity, these three claims of the patent are sus-

tained. As frankly stated by counsel for the defendants, the issue is a narrow one, "the chief question being one of infringement," and the task is to determine the nature and scope of the plaintiff's patent and compare it with the defendants' structure. The problem of the inventor was not a new type of pump or pump runner, but, broadly speaking, how to install an existing rotary type—preferably centrifugal—operate it, withdraw it for repairs, and replace it, without the necessity of a man entering the well. And, of course, to be practical, the device must, under ordinary operating conditions, be efficient and reasonably durable. Layne's conception was of a jointed or sectional mechanism, providing, when assembled, a driving shaft, connecting the pump runner at the bottom of the well with the actuating power at the surface, a continuous enclosing casing for the shaft, and a conduit through which the water is pumped to the surface, the sections to be of any desired length and added one at a time as the pump is lowered in the well, the assembled mechanism finally to hang pendant from supports at the surface. He suggests that the driving shaft and its casing may be carried upon the outside of the water conduit or within, but in either case the two are to be attached together at intervals to give increased strength and rigidity. An ingenious provision by which [828] the pump or propeller casing may be wedged in and made immovable at any point in the well by operating a lever at the surface is covered in some of the claims, but the feature is not a part of the generic idea, and is not presently involved. In practice the

wedging was found to be unnecessary and has never been used. An essential part of the main problem was to provide bearings to hold the driving shaft in alignment together with means for lubricating them and keeping them free from the sand more or less generally carried in the water. In the inventor's conception, these three functions were to be performed by the shaft casing. Reinforced by the conduit casing to which it is attached and subjected to the pull of the pendant weight, it would serve as a rigid footing for the requisite bearings. Being substantially water-tight, it would keep the sand out and at the same time serve as a conduit through which to furnish oil to the bearings. It was undoubtedly Layne's desire and purpose in so far as possible to exclude the water from the shaft casing, but perfect mechanical inclosure of the shaft is, of course, unattainable; it must protrude from the stationary casing to connect with the rotating propeller, at a point where the pressure of the water is the greatest, and a bearing at that point so close fitting as to entirely exclude the water could not be lubricated, and hence would be impracticable. The provision made by the patent is for a long bearing equipped with a stuffing-box, which, in conjunction with the down pressure of the oil in the casing, serves under ordinary operating conditions, as an effective barrier to the sand, if it does not entirely exclude the water.

If we visualize the plaintiff's combination invention, as disclosed by the patent, in one of its possible concrete forms, we see in the assembled mechanism, when installed, the pump or propeller with its



easing, at the bottom of the well; connecting with this casing a large pipe made up of sections coupled together, through which the water is carried to the surface; within this conduit and concentric therewith a much smaller pipe built up of similar sections, the two being firmly attached to each other at [829] suitable intervals by "spiders" or some other contrivance that does not seriously obstruct the flow of water; within the smaller casing and concentric therewith, the driving shaft, also made up of sections of the same length as the corresponding sections of the casings, the shaft connecting with the propeller at the bottom and a pulley or other suitable device, at the top, for receiving the power, and held in alignment by bearings constituting a part of the casing, the bearing at the bottom where the shaft protrudes to engage the propeller being fitted with a stuffing-box. In operation the oil is fed into the shaft casing above the uppermost bearing, and running down in the space between the casing and the shaft passes through the bearing, and thence down the casing through the several bearings, lubricating all in series. Manifestly if the oil is fed into the casing faster than it is dissipated, the vacant space will in time fill up and the column of oil thus formed will press upon and have a tendency to escape out of the lowest bearing, thus co-operating with the stuffing-box in excluding the water. That the structure may be installed and again taken out for repairs without the necessity of a man going beneath the surface is conceded, and that it is reasonably practical conclusively appears from its general use. Though not, strictly speak-

ing, a pioneer, the patent is of a fundamental, generic character, and in expressing his conception in physical form the patentee is entitled to a reasonable range of mechanical equivalents.

I do not attempt minutely to describe the defendants' structure. Long before they entered upon its manufacture they were intimately familiar with the plaintiff's mechanism both from the patent itself and from actual installations in the field. While in the unassembled parts there are many minor differences of construction, in the assembled structures I find no substantial distinction. Both accomplish the same result by substantially the same means, operating in substantially the same way. The defendants' structure is sectional, and is installed and removed from the well in the same manner as that of the plaintiff. There is a close [830] correspondence between the shaft sections, shaft casing sections and water conduit sections. The fact that in the defendants' mechanism the shaft bearing is an integral part of the combination coupling for both the shaft casing and the water conduit sections, and that no part of the pendant weight is carried by the shaft casing, while in the plaintiff's structure the bearings are built into the shaft casing alone or its coupling, is unimportant. In either case, when the members are assembled they constitute indispensable and integral parts of a single mechanism, and the two assembled mechanisms are strikingly similar in both form and function. In the Halstead patent (No. 1,228,770—June 5, 1917), under which the defendants profess to act, open joints in the shaft casing are specified, for the pur-

pose, it is said, of admitting small quantities of water therein, the contention being that by using as a lubricant emulsifying oil, which will mingle with the water thus admitted, the cost of lubrication may be materially reduced. The practicality of the idea may be doubted, but it need not be discussed. While in the earlier stages of the trial defendants vigorously resisted the plaintiff's contention that in the structure they actually installed in the field the shaft casings were made water-tight, the position was virtually abandoned before the close of the hearing; but, however that may be, the plaintiff's contention is thought to be supported by the overwhelming weight of the evidence. At the outset the defendants may have undertaken to follow the teaching of the Halstead patent, but at the time the suit was commenced they were using great care so to construct and assemble the sections and their connecting parts that when assembled a perfect union was made between the casing and coupling, to the complete exclusion of water; and as added safeguards, the joints were sealed with white lead, and for a considerable distance the space between the driving shaft and the walls of the casing was packed with hard grease. [831]

By the defendants much importance is attached to a feature of their lowermost shaft bearing—the one corresponding to the bearing in the plaintiff's mechanism equipped with a stuffing-box. In the lower portion of this bearing an annular groove is cut in the babbitt, leading from which small vents or slots are provided extending through the hub to the outside. For this device it is claimed the lubri-

cant in the casing will work downward until it reaches the groove, and the water on the outside will have a tendency to traverse the bearing in an upward direction until the groove is encountered, and there both the water and the lubricant, following the lines of least resistance, will discharge into the well through the ducts. Upon this theory it must be apparent that so much of the bearing as is below the groove will receive no lubricant at all, and being open to the sand carried in the water, will in time cut out and cease to function as a bearing. But if it be assumed that the contrivance is possessed of both novelty and utility and is patentable as an improvement, it still remains true that in utilizing it the defendants also appropriate the basic idea of the plaintiff's invention. It is not a case where the plaintiff's mechanism is a failure and the defendants have, by a slight invention or the invention of a small element, turned it into a success. Admittedly the plaintiff's mechanism is a success, and hence the most that could be said for the defendants' device is that it is an improvement.

It is also earnestly insisted by defendants that the two systems are differentiated by the fact that their lubricating system is circulatory, while that of the plaintiff is static. In one or two of the decisions cited *supra* more importance is attached to this consideration than under the evidence here I have been able to accord to it. Under the facts disclosed, the distinction is more apparent than real. In both cases the oil is fed in at the top in substantially the same manner, and under the force of gravity traverses the entire length of the shaft casing, lubri-

cating all of the bearings in its course. In the actual operation of the plaintiff's mechanism [832] there is necessarily some escape of thin oil through the bottom bearing; for, as already explained, a perfect closure at this point cannot be maintained. Possibly a larger quantity will escape at the bottom of defendants' structure; but even there, it is to be borne in mind, the lubricant must traverse a bearing of considerable length before it reaches the groove, and to some extent its down flow is resisted by the upward pressure of the water, which is only reduced and not wholly eliminated by the means described. Indeed, it is very probable that in both mechanisms a comparatively static condition is, under ordinary conditions, maintained at the lower end of the casing, due to the counter action or counter resistance of the columns of oil and water, one against the other. In the plaintiff's mechanism a contrivance is provided for drawing or forcing out of the casing the residuum of spent or impure lubricants; but it cannot be said that the groove and vents in defendants' structure perform such a function. If, as I have been constrained to find, in the defendants' actual installations, the shaft casing is made impervious to water and it is packed for a considerable distance above and below each bearing with a hard, immobile grease, the only possible function of which can be to prevent the ingress of water, to impede the progress of the lubricating oil, and itself to serve as a lubricant, it must be held that the term "circulatory lubricating system" is a misnomer, and that the difference in that respect between the two systems is colorable only. But, were

the contrary view to be taken, it would still remain true that the plaintiff's lubricating system is practical and efficient, and is a part of its combination invention, the fruits of which another may not rightfully appropriate by substituting for a single and successful feature other means for accomplishing the same result.

Accordingly it is thought that the plaintiff is entitled to the relief prayed for, and hence a decree in the usual form will be entered in its favor.

[Endorsed]: Filed Dec. 27, 1920. Walter B. Maling, Clerk. [833]

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In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

IN EQUITY—No. 485.

LAYNE & BOWLER CORPORATION,

Plaintiff,

vs.

WESTERN WELL WORKS, INC. (a Corporation), ROTARY DRILLING & DEVELOPMENT COMPANY (a Corporation), STANLEY M. HALSTEAD, P. E. VAUGHAN and ALLEN W. ROSS,

Defendants.

At a stated term of the District Court of the United States for the Southern Division of the Northern District of California, Second Division, to wit, the November, 1920, term, held at the courtroom thereof at the City and County of San Francisco, State of California, on the 31st day of December, A. D. 1920. Present: Honorable WILLIAM H. HUNT, Circuit Judge.

**Interlocutory Decree.**

This cause having heretofore come on regularly to be heard and tried in open court before United States District Judge Frank S. Dietrich, upon the pleadings and proofs, documentary and oral, taken and submitted in the case and being of record therein, the plaintiffs being represented by Messrs. Frederick S. Lyon, William K. White and Leonard S. Lyon, and the defendants by Messrs. Charles E. Townsend and William A. Loftus, and the cause having been submitted on briefs to the Court for its consideration and decision, and the Court being now fully advised in the premises and its opinion having been rendered and filed herein, it is hereby ORDERED, ADJUDGED AND DECREED as follows:

I. That the plaintiff, Layne & Bowler Corporation, [834] and the defendants, Western Well Works, Inc., and Rotary Drilling & Development Company, were and are, respectively, corporations, all as alleged in the bill of complaint herein and that all the allegations respectively contained in paragraphs II and III of said bill of complaint are true.

II. That the United States letters patent No. 821,653 issued on May 29, 1906, to Mahlon E. Layne for "Well Mechanism," in respect to the claims charged to have been infringed, to wit, claims 9, 13 and 20, thereof, are in all respects good and valid in law; that by a regular chain of assignments, duly executed by the parties thereto and duly delivered, said Mahlon E. Layne, prior to the commencement of this suit, sold, assigned and transferred unto the plaintiff, Layne & Bowler Corporation, the full and exclusive right, title and interest in and to said letters patent No. 821,653 for, to and in the State of California, and in and to all rights of action, claims and demands arising out of or accruing from the past infringement of said letters patent within the State of California, and ever since the plaintiff has been and now is the sole and exclusive owner of said exclusive right, title and interest in and to said letters patent and of all said rights of action, claims and demands.

III. That since the issuance of said letters patent, the invention, covered by said claims 9, 13 and 20, went into general use and upon each well mechanism embodying said invention and respectively sold by said Mahlon E. Layne, his various licensees and by the plaintiff, there has been marked the word "Patented" together with the date of said letters patent.

IV. That subsequent to April 15, 1915, and prior to the filing of the bill of complaint herein, and within the Southern Division of the Northern District of California, without the license or consent of plaintiff, or of its predecessors in interest, the de-



fendants, Western Well Works, Inc., Stanley M. Halstead, Rotary Drilling & Development Company, [835] P. E. Vaughan and Allen W. Ross have jointly made, used and sold well mechanism embodying the invention described in said letters patent and claimed and protected in and by said claims 9, 13 and 20 and thereby did infringe upon said claims and upon each of them.

V. That none of the defenses set up in the defendants' answer herein are sustained by the evidence and that each and all of said defenses be and the same are hereby overruled.

VI. That the defendants, Western Well Works, Inc., Rotary Drilling & Development Company, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, and each of them, their respective attorneys, agents, servants and employees, and each of them, and the respective officers of said two defendant corporations, be and they are and each of them is hereby permanently enjoined and restrained from making, using or selling or causing to be made, used or sold, any well mechanism embodying or containing the invention described in said letters patent and claimed in and by said claims 9, 13 and 20 of said letters patent No. 821,653, or either or any of said claims, and from infringing upon and from contributing to the infringement of said claims, or either or any of them, and that a permanent writ of injunction be issued out of and under the seal of this court commanding and enjoining the said defendants, their attorneys, officers, agents, servants and employees, as aforesaid, which said claims read as follows:

"9. In well mechanism the combination with a pump casing, of a rotary pump of a jointed pump shaft and a closed casing surrounding the pump shaft from the pump to the top of the well."

"13. The combination with a pump and its actuating shaft of a sectional casing therefor provided at each end of each section with a fixed block with bearings for the shaft, the casing being closed at the top and provided with an air vent." [836]

"20. The combination of a well casing, a rotary pump therein, and a line shaft for the pump entirely closed off from the water in the well."

VII. That the plaintiff do have and recover of and from the said defendants, Western Well Works, Inc., Rotary Drilling & Development Company, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, the profits of which said defendants have realized and the damages which the plaintiff has sustained from and by reason of the infringement aforesaid, and for the purpose of ascertaining and stating the amount of said profits and damages, IT IS ORDERED, ADJUDGED AND DECREED that this cause be referred to Honorable H. M. Wright, Esq., standing Master in Chancery of this court, to ascertain, take, state and report to this court an account of all the profits received, realized or accrued by and to the defendants and each of them, and to assess all the damages suffered by the plaintiff from and by reason of the infringement aforesaid, and that on said accounting the plaintiff have the right to cause an examination of the respective officers, agents, servants, attorneys, workmen and employees of the defendants, *ore tenus*,

and also be entitled to the production of the books, vouchers, documents and records of the defendants in connection with the accounting, and that the said defendants, their officers, agents, servants, attorneys, workmen and employees attend for such purpose before the Master from time to time as the Master shall direct.

IT IS FURTHER ORDERED, ADJUDGED AND DECREED that the plaintiff do have and recover its costs and disbursements in this suit to be hereafter taxed, and that plaintiff have the right to apply to the Court from time to time for such other and further relief as may be necessary and proper in the premises.

WM. H. HUNT,  
U. S. Judge. [837]

Receipt of copy of the within proposed Decree admitted this 28th day of Dec., A. D. 1920.

CHAS. E. TOWNSEND and  
WM. A. LOFTUS,

For Defts.

Approved as to form.

CHAS. E. TOWNSEND,  
Atty. for Defts.

[Endorsed]: Filed and entered December 31, 1920.  
Walter B. Maling, Clerk. By J. A. Schaertzer,  
Deputy Clerk. [838]

(Title of Court and Cause.)

**Petition for Order Allowing Appeal.**

To the Honorable Court, Above Entitled:

The above-named defendants, Western Well Works, Inc., Rotary Drilling & Development Company, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, conceiving themselves aggrieved by the decree filed and entered on the 31st day of December, 1920, in the above-entitled cause, do hereby appeal therefrom to the United States Circuit Court of Appeals for the Ninth Judicial Circuit, for the reasons and on the grounds specified in the assignment of errors, which is filed herewith, and prays that this appeal may be allowed, that a citation issue as provided by law, and that a transcript of the record, proceedings, exhibits and papers, upon which said decree was made and entered as aforesaid, duly authenticated, may be sent to the Circuit Court of Appeals for the Ninth Circuit, sitting at San Francisco.

And your petitioners further pray that an order be made fixing the amount of security which the defendants shall give and furnish upon such appeal, and that upon giving such security all further proceedings in this court, including the injunction, be suspended and stayed until the determination of said appeal by said United States Circuit Court of Appeals for the Ninth Circuit.

CHAS. E. TOWNSEND,  
WM. A. LOFTUS,  
Solicitors for Defendants. [839]

(Title of Court and Cause.)

**Order Allowing Appeal.**

The foregoing petition for appeal is allowed and upon the petitioners filing a bond in the sum of Five Thousand (\$5,000.00) Dollars with sufficient sureties, to be conditioned as required by law, same shall operate to suspend and stay all further proceedings in this court, as well as the injunction, until the determination of said appeal by the United States Circuit Court of Appeals for the Ninth Circuit; provided and further conditioned that the record on appeal be filed in the office of the clerk of the Court of Appeals on or before January 8th, 1921, and the cause docketed for hearing at the February, 1921, term of said Court of Appeals.

WM. H. HUNT,

United States Circuit Judge.

Service of the within petition for order allowing appeal and order allowing appeal admitted this 31st day of December, A. D. 1920.

WM. K. WHITE,

For Plaintiff.

[Endorsed]: Filed Dec. 31, 1920. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk. [840]

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(Title of Court and Cause.)

**Assignment of Errors.**

Now come Western Well Works, Inc., Rotary Drilling & Development Company, Stanley M. Hal-

stead, P. E. Vaughan and Allen W. Ross, defendants in the above cause in the court below, and appellants herein, by Chas. E. Townsend, Esq., and Wm. A. Loftus, Esq., their solicitors and counsel, and say that in the record and proceedings in the said cause in the said court below there is manifest error, and they particularly specify as the errors upon which they will rely and which they will urge upon their appeal in the above-entitled cause:

(1) That the District Court of the United States for the Northern District of California, Southern Division, erred in holding that the defendants and or either of them had infringed any of the claims of the patent in suit.

(2) That the District Court of the United States for the Northern District of California, Southern Division, erred in holding that the patent and or any of the claims thereof was or are valid.

(3) That the District Court of the United States for the Northern District of California, Southern Division, erred in holding that the alleged invention covered by claims 9, 13 and 20, or any of them, had gone into general or any use.

(4) That the District Court of the United States for the Northern District of California, Southern Division, erred in not dismissing the bill of complaint against the defendant, Rotary Drilling & Development Co.

(5) That the District Court of the United States for the Northern District of California, Southern Division, erred in enjoining defendants, or any of them, from the manufacture, [841] sale or use of the defendants' structure alleged to infringe.

(6) That the District Court of the United States for the Northern District of California, Southern Division, erred in not dismissing the bill of complaint.

In order that the foregoing assignment of errors may be and appear of record, the appellants present the same to the Court, and pray that such disposition be made thereof as in accordance with the law and the statutes of the United States in such cases made and provided.

All of which is respectfully submitted.

CHAS. E. TOWNSEND,

WM. A. LOFTUS,

Solicitors for Appellants.

Service of copy of the within assignment of errors, admitted this 31st day of December, A. D. 1920.

WM. K. WHITE,

For Appellee.

[Endorsed]: Filed Dec. 31, 1920. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk. [842]

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(Title of Court and Cause.)

**Stipulation and Order Respecting Record on Appeal.**

IT IS HEREBY STIPULATED AND AGREED by and between the above-named parties that the transcript of record on appeal herein shall include and embrace the entire record of all the proceedings, testimony, in the exact words of the respective witnesses, evidence and proofs taken, ad-

duced or introduced on and during the final hearing of the above-entitled cause.

IT IS FURTHER STIPULATED that all original exhibits offered in evidence in said cause may be withdrawn from the files of the above-entitled court and of the clerk thereof and by said clerk be transmitted to the United States Circuit Court of Appeals for the Ninth Circuit as a part of said record on appeal; the said original exhibits to be returned to the files of this court upon the determination of said appeal by said Circuit Court of Appeals.

FREDERICK S. LYON,  
WILLIAM K. WHITE,  
LEONARD S. LYON,

Solicitors for Plaintiff.

CHAS. E. TOWNSEND,  
WM. A. LOFTUS,

Solicitors for Defendants.

**ORDER.**

The foregoing stipulation is hereby approved and an order to the same effect is hereby made.

W. H. HUNT,  
Circuit Judge.

Dated December 31, 1920.

[Endorsed]: Filed Dec. 31, 1920. W. B. Maling,  
Clerk. By J. A. Schaertzer, Deputy Clerk. [843]

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(Title of Court and Cause.)

**Bond on Appeal.**

KNOW ALL MEN BY THESE PRESENTS:  
That we, Western Well Works, Inc., Rotary Drill-



ing & Development Company, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, the appellants herein, as principals, and United States Fidelity & Guaranty Company, a corporation, duly organized and existing under and by virtue of the laws of the State of Maryland, as surety, are held and firmly bound unto the above-named appellee, Layne & Bowler Corporation, in the sum of Five Thousand (\$5,000.00) Dollars, lawful money of the United States of America, for the payment of which, well and truly to be made unto the said Layne & Bowler Corporation, its successors and assigns, we bind ourselves, our successors and assigns, jointly and severally, firmly by these presents; upon condition nevertheless, that

WHEREAS, the said appellants, Western Well Works, Inc., Rotary Drilling & Development Company, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, have an appeal to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the interlocutory decree for an injunction granted in the above-entitled suit in the District Court of the United States for the Northern District of California, Southern Division, which said interlocutory decree was entered in said District Court on the 31st day of December, 1920, and an appeal allowed superseding said decree.

Now, therefore, the condition of this obligation is such that if the above-named appellants shall prosecute said appeal to effect and answer all damages and costs, if they shall fail to make their plea good, and shall pay all damages and profits which may result from its or their pumps, the

manufacture and sale of which was by the said injunction enjoined from and after the date [844] herein until the final decision of the said Circuit Court of Appeals thereon, then this obligation shall be void; otherwise the same shall be and remain in full force and virtue.

But it is understood that this bond shall not be considered as securing the payment of any damages or profits which may have resulted from the manufacture and sale of said infringing devices prior to the date hereof.

IN WITNESS WHEREOF, the corporate name and seal of the said principal, Western Well Works, Inc., is hereunto affixed and attested by its duly authorized officers, and the corporate name and seal of said surety has been hereunto duly affixed and attested by its attorneys in fact, thereunto duly authorized at San Francisco, California, this 4th day of January, 1921.

WESTERN WELL WORKS, INC.

[Seal]

Per P. E. VAUGHAN,  
President.

Per S. M. HALSTEAD,  
Secy. and Treas.

UNITED STATES FIDELITY & GUAR-  
ANTY COMPANY.

[Seal]

By HENRY V. D. JOHNS,  
By JAMES M. KENNEDY,  
Attorneys in Fact.

State of California,  
City and County of San Francisco,—ss.

On this 4th day of January, in the year one thousand nine hundred and 21, before me, Muriel

Atherton Russell, a notary public in and for the City and County of San Francisco, personally appeared Henry V. D. Johns and James M. Kennedy, known to me to be the persons whose names are subscribed to the within instrument as the attorneys in fact of the United States Fidelity and Guaranty Company, and acknowledged to me that they subscribed the name [845] of the United States Fidelity and Guaranty Company thereto as principal, and their own names as attorneys in fact.

[Seal] MURIEL ATHERTON RUSSELL,  
Notary Public in and for the City and County of  
San Francisco, State of California.

State of California,  
County of Santa Clara,—ss.

On this third day of January, in the year 1921, before me, Wesley Pieper, a notary public in and for the County of Santa Clara, State of California, personally appeared P. E. Vaughan, known to me to be the president, and S. M. Halstead, known to me to be the secretary-treasurer of the corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

In witness whereof, I have hereunto set my hand and affixed my official seal at my office in said county of Santa Clara the day and year in this certificate first above written.

[Seal] WESLEY PIEPER,  
Notary Public in and for the County of Santa  
Clara, State of California.

My commission expires November 26, 1922.

Office: 16 West Santa Clara St., San Jose, Cal.

(Premium charged for this bond is \$50.00 per annum.)

The foregoing bond is hereby approved to operate as a supersedeas to said injunction.

WM. H. HUNT,  
Judge.

[Endorsed]: Filed Jan. 4, 1921. W. B. Maling, Clerk, By J. A. Schaertzer, Deputy Clerk. [846]

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In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

No. 485—EQUITY.

LAYNE & BOWLER CORPORATION,  
Plaintiff,

vs.

WESTERN WELL WORKS, INC., a Corporation,  
et al.,

Defendants.

**Certificate of Clerk U. S. District Court to Transcript of Record.**

I, Walter B. Maling, Clerk of the District Court of the United States, in and for the Northern District of California, do hereby certify the foregoing eight hundred and forty-six (846) pages, numbered from 1 to 846, inclusive, to be full, true and correct copies of the record and proceedings as the same remain on file and of record in the above-entitled cause, and that the same constitute the record on

appeal to the United States Circuit Court of Appeals for the Ninth Circuit.

I further certify that the cost of the foregoing transcript of record is \$369.95; that said amount was paid by the defendants; and that the original citation issued herein is hereunto annexed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said District Court this 5th day of January, A. D. 1921.

[Seal] WALTER B. MALING,  
Clerk United States District Court for the Northern  
District of California. [847]

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**Citation.**

UNITED STATES OF AMERICA,—ss.

The President of the United States, to Layne & Bowler Corporation, GREETING:

You are hereby cited and admonished to be and appear at a United States Circuit Court of Appeals for the Ninth Circuit, to be holden at the city of San Francisco, in the State of California, within thirty days from the date hereof, pursuant to an order allowing an appeal, of record in the clerk's office of the United States District Court for the Northern District of California, Second Division, wherein Western Well Works, Inc. (a Corporation), Rotary Drilling & Development Company (a Corporation), Stanley M. Halstead, P. E. Vaughan and Allen W. Ross are appellants, and you are appellee, to show cause, if any there be, why the decree rendered against the said appellants, as in

the said order allowing appeal mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

WITNESS, the Honorable WILLIAM H. HUNT, United States Circuit Judge for the Ninth Judicial Circuit, this 4th day of January, A. D. 1921.

W. H. HUNT,  
United States Circuit Judge. [848]

Service of a true copy of the within citation acknowledged this 4th day of January, 1921.

WM. K. WHITE,  
Attorney for Layne & Bowler Corporation,  
Plaintiff-Appellee.

[Endorsed]: No. 485—Eq. United States District Court for the Northern District of California. Western Well Works, Inc., a Corporation, et al., Appellants, vs. Layne & Bowler Corp. Citation on Appeal. Filed Jan. 4, 1921. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk.

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[Endorsed]: No. 3627. United States Circuit Court of Appeals for the Ninth Circuit. Western Well Works, Inc., a Corporation, Rotary Drilling & Development Company, a Corporation, Stanley M. Halstead, P. E. Vaughan and Allen W. Ross, Appellants, vs. Layne & Bowler Corporation, Appellee. Transcript of Record. Upon Appeal from the Southern Division of the United States District

*vs. Layne & Bowler Corporation.* 913

Court for the Northern District of California,  
Second Division.

Filed January 6, 1921.

F. D. MONCKTON,

Clerk of the United States Circuit Court of Appeals  
for the Ninth Circuit.

By Paul P. O'Brien,  
Deputy Clerk.